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ANNUAL REPORT OF THE  
GOVERNOR OF THE  
PANAMA CANAL, 1927

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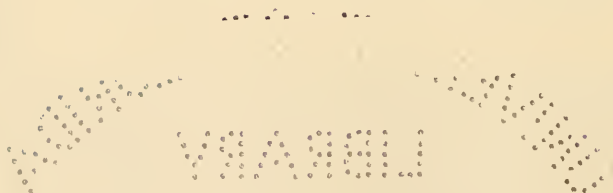
ANNUAL REPORT  
OF THE  
GOVERNOR OF  
THE PANAMA CANAL  
FOR THE  
FISCAL YEAR  
ENDED JUNE 30  
1927



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WASHINGTON  
1927

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2. Direct-connected Diesel-electric generators in new plant, Miraflores.
3. Construction of manufacturing plants and storehouse for Commissary Division at Mount Hope.
4. Pedro Miguel Lock. Cargo carrier on left being raised to level of Gaillard Cut; passenger liner on right being lowered to level of Miraflores Lake.
5. New Cristobal. Type 1 cottages, of which 48 are being constructed

## APPENDIXES NOT PRINTED

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### REPORTS OF HEADS OF DEPARTMENTS AND DIVISIONS

Reports for the fiscal year 1927 have been made as follows and may be consulted at the Washington office of The Panama Canal or at the office of the Governor, Balboa Heights, Canal Zone:

Engineer of maintenance:

- Assistant engineer of maintenance, report of.
- Pacific locks, report of superintendent.
- Atlantic locks, report of superintendent.
- Electrical division, report of electrical engineer.
- Municipal engineering division, report of municipal engineer.
- Dredging division, report of superintendent.
- Office engineer, report of.
- Meteorology and hydrography; surveys; report of chief of surveys.
- Gatun dam and backfills, report of general foreman.

Marine division, report of superintendent.

Mechanical division, report of superintendent.

Supply department, report of chief quartermaster.

Executive department:


- Division of civil affairs, report of chief of division.
- Police and fire division, report of chief of division.
- Division of schools, report of superintendent of schools.
- Bureau of clubs and playgrounds, report of general secretary.

District attorney, report of.

Accounting department, report of the auditor.

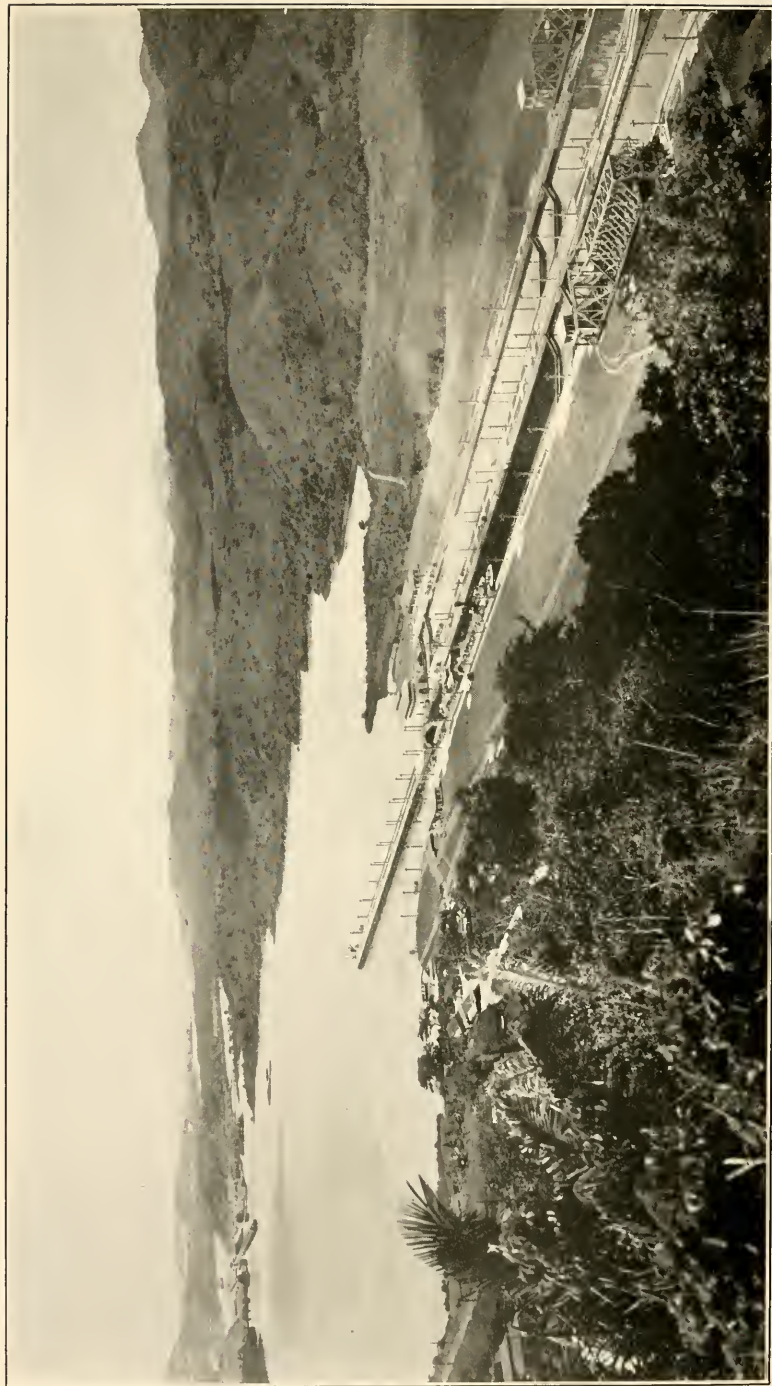
Land agent, The Panama Canal and Panama Railroad Co., report of.

Purchasing department, report of the general purchasing officer and chief of Washington office.



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PEDRO MIGUEL LOCK, MIRAFLORES LAKE AND SECTION OF PACIFIC SEA-LEVEL CHANNEL OF THE PANAMA CANAL



ANNUAL REPORT  
OF THE  
GOVERNOR OF THE PANAMA CANAL

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BALBOA HEIGHTS, CANAL ZONE,  
*August 27, 1927.*

The SECRETARY OF WAR,  
*Washington, D. C.*

SIR: I have the honor to submit the report of the Governor of The Panama Canal for the fiscal year ended June 30, 1927.

Respectfully,

M. L. WALKER, *Governor.*

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INTRODUCTION

The traffic through The Panama Canal in the year ending June 30, 1927, was greater than in any preceding fiscal or calendar year. Our main interest has been in the proper handling of this procession of vessels, not only in their transit through the canal but in the prompt and adequate supply of their needs of fuel, stores, and repairs at the terminals. Along with this we have carried on the deepening of the Pacific sea-level section, the maintenance of other parts of the channel, and the overhaul of the machinery of the locks at Gatun, as well as the current maintenance of all other equipment. We have been engaged also on the erection of additional buildings for the furtherance of canal operations, the supplying of vessels, and the replacement of worn-out quarters for employees. Municipal improvements have been made in step with an increasing population of employees and their families, and the growth of the terminal cities in Panama for which we furnish water, sewer, and street work.

The principal elements in the administration of The Panama Canal are:

First, operation and maintenance of the canal proper in which are included work in passing vessels through the waterway and maintaining the channel, locks, aids to navigation, etc.;

Second, business activities required for shipping and the canal forces; for example, storehouses and retail establishments for purveying foodstuffs and supplies, oil, and coaling plants, dry docks and

shops for repair and manufacturing, including railway work; operation of the Panama Railroad on the Isthmus, piers and wharves for the handling of cargo and passengers, operation of the Panama Railroad Steamship Line plying between New York and the Isthmus via Haiti, with branch communications to ports of Colombia and Ecuador; operation of quarters for the canal force and their families, and the conducting of other business enterprises which in the usual community are under private management; and

Third, governmental or municipal administration for the Canal Zone, including public schools, medical and hospital service and sanitation, postal system, police and fire protection, customs service, quarantine and immigration, and some provision for recreation in a population which includes approximately 8,000 civilian Americans, 9,000 in military and naval stations, and 20,000 West Indians and natives.

Under the provisions of the Panama Canal act responsibility for the administration of The Panama Canal is centered in the Governor. In the present organization the Governor has distributed the work among nine major departments and divisions, the heads of which are responsible to him.

#### OPERATION AND MAINTENANCE OF THE CANAL

The essential business at the canal from the point of view of the world at large is the maintenance of the passage for vessels between the oceans. The fiscal year 1927 was another in which no delays to traffic occurred. Vessels were handled both in transit and at the terminals with the promptness which operators have learned to expect and demand. During the year a total of 6,072 seagoing vessels passed through the canal, an average of 16.6 per day. Of these vessels, 1,962, or approximately one-third, made use of the terminal ports in discharging or loading passengers or cargo.

In the handling of traffic in restricted channels and in transit through the locks various accidents occurred. In the past year a total of 60 accidents took place, as compared with 83 in the previous year. The most serious of these accidents resulted in damages estimated at \$45,000. The cases in which damages were \$1,000 or more numbered 15.

The United States Battle Fleet totaling 71 vessels, the major unit of the United States Fleet, conducted maneuvers in the canal waters in March. Fifty-seven of the 71 vessels passed through the canal from Balboa to Cristobal for maneuvers in Atlantic waters contiguous to the Isthmus. The greater part of these returned to the Pacific in June. The transits of the fleet were handled, as on previous visits, without mishap and without important delay to commercial vessels,

although this additional traffic involved considerable amount of overtime work for employees engaged in transit operations.

The deepening of the Pacific sea-level section, the removal of material brought into the canal by small slides in June, and the general maintenance of channel were carried on through the year without interference with traffic.

#### BUSINESS OPERATIONS

From the beginning of canal construction and continuing with increasing importance after the canal was opened to operation, the organization has engaged in certain business enterprises necessary for the carrying on of the work and for the convenience of shipping. The employees must be housed and provided with the necessities and comforts of life and must have means for transportation to and from the United States on leaves of absence to be spent in the temperate zone. Shipping requires repair facilities, bunkering stations, chandlery, and other essential supplies, and for purposes of transshipment must have wharves and piers. These activities are carried on by either The Panama Canal or the Panama Railroad Co., the latter being in all essentials a department of the canal organization.

Years of experience have demonstrated the value of all of these services. Combined under the one organization they assure to shipping adequate facilities at reasonable prices under a management which is devoted primarily to the efficient handling of vessels. From the administrative point of view, they make much easier the maintenance of an adequate and contented force which can be depended on for the effective operation of the canal. With regard to the element of national defense, they place under the direct control of the Government certain plants and stores of supplies essential to the use of the canal terminals as naval bases and to the husbanding of resources in case of possible siege. It is notable that in the face of the general opposition to the Government's engaging in business activities, the wisdom of this arrangement at the canal is recognized practically universally.

#### ADMINISTRATION—GOVERNMENT

The administration of such functions of government as public health; quarantine; immigration service; customs; post offices; schools; police and fire protection; construction and maintenance of roads, streets, water supply, and sewers; hydrographic and meteorological observations; steamboat inspection; aids to navigation, etc., are all embraced in the single organization of The Panama Canal under the direct control of the Governor. Here again the concentration under

one control has simplified the operations of the canal and coordinated all of these activities to the main function of prompt and reliable handling of vessels. It has also resulted in economies of administration, since under this control it is possible to place under one organization or even one individual, duties which in a less centralized administration would be the function of two or more administrative units.

#### NET REVENUE OF THE CANAL AND ITS AUXILIARIES

For the fiscal year 1927 the net income from tolls and other miscellaneous receipts grouped under the head of "Transit revenue" was \$15,611,093.80, as compared with \$15,151,668.06 in 1926, \$13,465,924.72 in 1925, and \$16,307,948.50 in 1924.

The net profits on auxiliary business operations conducted directly by The Panama Canal, of which the most important are the mechanical shops, material storehouses, and fuel-oil plants, totaled \$876,536.80, as compared with \$841,310.29 in 1926, \$765,916.85 in 1925, and \$901,624.12 in 1924; while those conducted by the Panama Railroad Co., exclusive of the Panama Railroad Steamship Line but including commissaries, docks, coaling plants, and cattle industry, showed a profit of \$1,644,189.37, as compared with \$1,347,887.33 in 1926, \$1,525,910.13 in 1925, and \$1,044,887.04 in 1924. The total net revenue of the year from all sources, exclusive of the Panama Railroad Steamship Line, was \$18,131,819.97, as compared with \$17,340,865.68 in 1926, \$15,757,751.70 for 1925, and \$18,254,459.66 in 1924.

In tabulated form the financial results of the operation of the canal and its auxiliaries on the Isthmus were:

	1927	1926
Net transit revenue.....	\$15, 611, 093. 80	\$15, 151, 668. 06
Net revenue on Panama Canal business operations.....	876, 536. 80	841, 310. 29
Total net revenue, Panama Canal.....	16, 487, 630. 60	15, 992, 978. 35
Net revenue on Panama Railroad business operations.....	1, 644, 189. 37	1, 347, 887. 33
Combined net revenue.....	18, 131, 819. 97	17, 340, 865. 68

## SERVICES RENDERED BY THE CANAL TO SHIPPING

In terms of service to shipping, the main items accomplished during the past fiscal year, as compared with 1926, were:

	1927	1926
Transits of the canal by ships paying tolls.....	5, 475	5, 197
Free transits.....	597	552
Calls at canal ports by ships not transiting canal.....	1, 061	963
Cargo handled at ports (tons).....	1, 150, 807	1, 089, 244
Coal sales and issues (tons).....	372, 461	347, 619
Coal—number of ships served other than vessels operated by The Panama Canal.....	907	902
Fuel oil pumped (barrels).....	16, 350, 399	12, 562, 146
Fuel oil—number of ships served other than vessels operated by The Panama Canal.....	2, 874	2, 064
Ships repaired, other than Panama Canal equipment.....	911	836
Ships dry-docked, other than Panama Canal equipment.....	120	109
Provisions sold to ships (commissary sales).....	\$1, 308, 520. 02	\$1, 174, 478. 46
Chandlery sold to ships (storehouse sales).....	\$134, 106. 36	\$109, 590. 58



## SECTION I

### CANAL OPERATION AND TRADE VIA PANAMA

#### TRAFFIC IN 1927

The number of commercial transits, the net tonnage of vessels, Panama Canal measurement, and the volume of cargo passing through the canal for the year ended June 30, 1927, exceeded those in any preceding fiscal or calendar year. The receipts for tolls aggregated \$24,228,830.11, and were \$62,133.43, or about one day's collections (the average per day for the fiscal year was \$66,380.36), less than the record figure of \$24,290,963.54 collected during the fiscal year 1924.

The number of commercial ships transiting the canal averaged 15 per day as compared with 14.2 in 1926. Including transits of naval and other public vessels of the United States, public vessels of the Republics of Panama and Colombia, but omitting small nonseagoing launches, the daily average number of ships transiting the canal was 16.6 during 1927 as compared with 16 during the preceding fiscal year.

With the exception of traffic from the west coast of South America, commerce over all the major trade routes served by the canal increased as compared with the preceding year. Nitrate shipments from the west coast of South America declined more than 700,000 tons as compared with the fiscal year 1926, which reduced by about one-sixth the volume of outgoing cargo and also affected the purchasing of American and European products. Nitrate and coal were the only important commodities passing through the canal in which shipments declined appreciably as compared with the preceding year.

Mineral oil shipments were fairly uniform throughout the year. They made up slightly more than one-fourth of the total cargo passing through the canal, and likewise were the source of more than one-fourth of the total revenue received in tolls. Slightly over four-fifths of the mineral-oil shipments originated in the California area.

Traffic figures for each fiscal year since the canal was opened to navigation are shown in the table below:

Fiscal year ending June 30—	Number of transits	Panama Canal net tonnage	Tolls	Tons of cargo
1915 <sup>1</sup>	1,075	3,792,572	\$4,367,550.19	4,888,454
1916 <sup>2</sup>	758	2,396,162	2,408,089.62	3,094,114
1917	1,803	5,798,557	5,627,463.05	7,058,563
1918	2,069	6,574,073	6,438,853.15	7,582,031
1919	2,024	6,124,990	6,172,828.59	6,916,621
1920	2,478	8,546,044	8,513,933.15	9,374,499
1921	2,892	11,415,876	11,276,889.91	11,599,214
1922	2,736	11,417,459	11,197,832.41	10,884,910
1923	3,967	18,605,786	17,508,414.85	19,567,875
1924	5,230	26,148,878	24,290,963.54	26,994,710
1925	4,673	22,855,151	21,400,523.51	23,958,836
1926	5,197	24,774,591	22,931,055.98	26,037,448
1927	5,475	26,227,815	24,228,830.11	27,748,215
Total	40,377	174,677,954	166,363,228.06	185,655,490

<sup>1</sup> Canal opened to traffic Aug. 15, 1914.

<sup>2</sup> Canal closed to traffic approximately 7 months of fiscal year by slides.



Commercial traffic was fairly uniform through the year. By months, the number of transits ranged between 428 in November and 496 in March, the daily averages between 14.26 in November and 16.03 in February, a difference of 1.77, or 12.4 per cent of the average for the lowest month. Monthly transits and tolls, with daily averages, were as follows:

Month	Total for month		Daily averages	
	Transits	Tolls	Transits	Tolls
1926				
July.....	456	\$1,980,719.67	14.71	\$63,894.18
August.....	464	2,055,041.91	14.96	66,291.67
September.....	446	2,019,626.42	14.86	67,320.88
October.....	445	1,989,213.93	14.36	64,168.19
November.....	428	1,889,001.11	14.26	62,966.70
December.....	453	1,996,036.72	14.77	64,388.28
1927				
January.....	443	1,984,760.71	14.29	64,024.54
February.....	449	1,994,860.82	16.03	71,245.03
March.....	496	2,217,913.20	16.00	71,545.59
April.....	464	2,065,206.92	15.46	68,840.23
May.....	471	2,066,070.73	15.19	66,647.44
June.....	455	1,970,377.97	15.16	65,679.26
Total.....	5,475	24,228,830.11	15.00	66,380.36

Comparison by months with traffic in the preceding fiscal year is shown as follows:

Month	Number of vessels		Panama Canal net tonnage		Tons of cargo		Tolls	
	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27	1925-26	1926-27
July.....	418	456	1,951,295	2,154,821	1,960,654	2,185,527	\$1,800,239.84	\$1,980,719.67
August.....	372	464	1,779,627	2,230,905	1,912,217	2,321,697	1,657,893.90	2,055,041.91
September.....	388	446	1,831,039	2,186,804	1,891,988	2,239,547	1,692,723.11	2,019,626.42
October.....	410	445	1,955,485	2,124,519	2,009,171	2,374,711	1,826,314.64	1,989,213.93
November.....	424	428	2,028,034	2,032,488	2,023,398	2,272,449	1,870,087.68	1,889,001.11
December.....	462	458	2,257,409	2,135,002	2,358,170	2,310,270	2,111,896.53	1,996,036.72
January.....	479	443	2,300,187	2,121,631	2,346,643	2,241,765	2,103,368.29	1,984,760.71
February.....	423	449	1,991,127	2,201,328	2,139,207	2,230,107	1,835,226.47	1,994,860.82
March.....	506	496	2,398,694	2,413,999	2,607,046	2,533,525	2,206,212.20	2,217,913.20
April.....	425	464	2,048,247	2,224,500	2,237,567	2,429,807	1,917,457.11	2,065,206.92
May.....	470	471	2,243,103	2,248,892	2,416,701	2,379,713	2,056,965.55	2,066,070.73
June.....	419	455	1,960,344	2,152,926	2,134,686	2,229,097	1,852,670.66	1,970,377.97
Total.....	5,197	5,475	24,774,591	26,227,815	26,037,448	27,748,215	22,931,055.98	24,228,830.11

#### PROPORTION OF TANKER TRAFFIC

During the fiscal year 1927 tanker traffic, both actually and relatively, was greater than for any preceding fiscal year excepting 1924. Tank ships comprised 24.2 per cent of the total commercial transits, made up 29.1 per cent of the total Panama Canal net tonnage, were the source of 27.5 per cent of the total tolls collected, and carried 26.1 per cent of the total cargo passing through the canal during the year.

The increase in net tonnage and tolls in the past fiscal year as compared with the fiscal year 1926 was due primarily to increase in

mineral-oil shipments. Tanker tonnage for 1927 was 1,280,872 tons, Panama Canal measurement, more than in the previous year, while net tonnage of general cargo vessels increased 172,352 tons. For the total gain of 1,453,224 tons, approximately 6 per cent of the previous year's net tonnage, tankers were responsible for 88 per cent. In tolls there was an increase of \$1,032,638.97 from tankers, compared with the increase of \$265,135.16 in tolls from general cargo carriers; and tankers were responsible for 80 per cent of the increase. The apparent discrepancy between 88 per cent for net tonnage and 80 per cent for tolls is due to the fact that a great part of the tanker transits are in ballast, while vessels built for general cargo are usually laden in both directions.

Omitting transits of public vessels of the United States and other ships exempt from the payment of tolls, the number of ocean vessels transiting the canal daily averaged 15 throughout the year. Of this number tank ships averaged 3.6 transits daily, the balance being made up of general cargo carriers, passenger ships, warships of foreign nations, etc.

In the tables below the commercial traffic has been segregated to show the proportion of tanker transits, tonnage, and tolls as compared with corresponding figures embracing all other classes of traffic:

PROPORTION OF TANKERS TO TOTAL TRAFFIC

	Total commercial transits			Average daily transits		
	Tankers	General	Total	Tankers	General	Total
July.....	114	342	456	3.68	11.03	14.71
August.....	121	343	464	3.90	11.06	14.96
September.....	119	327	446	3.96	10.90	14.86
October.....	105	340	445	3.39	10.97	14.36
November.....	90	338	428	3.00	11.26	14.26
December.....	103	355	458	3.32	11.45	14.77
January.....	103	340	443	3.32	10.97	14.29
February.....	104	345	449	3.71	12.32	16.03
March.....	118	378	496	3.81	12.19	16.00
April.....	123	341	464	4.10	11.36	15.46
May.....	115	356	471	3.71	11.48	15.19
June.....	109	346	455	3.63	11.53	15.16
Fiscal year—						
1927.....	1,324	4,151	5,475	3.60	11.40	15.00
1926.....	1,090	4,107	5,197	3.00	11.20	14.20
1925.....	1,079	3,594	4,673	2.90	9.80	12.80
1924.....	1,704	3,526	5,230	4.60	9.60	14.20
1923.....	913	3,054	3,967	2.50	8.30	10.80

PROPORTION OF TANKER TONNAGE TO TOTAL TONNAGE

	Panama Canal net tonnage			Percentage of total net tonnage		
	Tankers	General	Total	Tankers	General	Total
Fiscal year—						
1927.....	7,624,112	18,603,703	26,227,815	29.1	70.9	100.0
1926.....	6,324,240	18,431,351	24,774,591	25.5	74.5	100.0
1925.....	6,424,622	16,430,529	22,855,151	28.1	71.9	100.0
1924.....	10,212,047	15,936,831	26,148,878	39.1	60.9	100.0
1923.....	5,374,384	13,231,402	18,605,786	28.9	71.1	100.0

## PROPORTION OF TOLLS FROM TANK SHIPS TO TOTAL TOLLS FROM ALL VESSELS

	Tolls paid by shipping using canal			Percentage of total tolls		
	Tankers	General	Total	Tankers	General	Total
Fiscal year—						
1927-----	\$6,658,806.90	\$17,570,023.21	\$24,228,830.11	27.5	72.5	100.0
1926-----	5,626,167.93	17,304,888.05	22,931,055.98	24.4	75.6	100.0
1925-----	5,728,302.26	15,672,221.25	21,400,523.51	26.8	73.2	100.0
1924-----	9,071,835.65	15,219,127.89	24,290,963.54	37.3	62.7	100.0
1923-----	4,769,324.63	12,738,874.94	17,508,199.57	27.2	72.8	100.0

## TANKER CARGOES

Mineral oils carried through the canal in tank ships aggregated 7,250,579 tons for the fiscal year as compared with 6,073,779 tons during 1926. Of the total, 137,288 tons passed through the canal from the Atlantic to the Pacific, and 7,113,291 tons from the Pacific to the Atlantic. Shipments of both Californian and Peruvian oils increased as compared with the preceding year, and of the past year's total, 5,565,477 tons were from the port of Los Angeles.

The above figures for tanker cargoes do not comprise all mineral-oil shipments passing through the canal, as considerable quantities of refined oils in cases are carried through the canal in general cargo vessels.

## NATIONALITY OF VESSELS

Twenty-five flags were represented in the commercial traffic passing through the canal during the fiscal year. Tonnage under the United States flag was more than twice as great as that under the flag of any other nation. Combined, tonnage under the British and American flags comprised approximately four-fifths of the whole, with the flag of the next highest nation contributing less than 4 per cent of the whole.

With respect to cargo tonnage routed through the canal, vessels of United States registry carried approximately 55 per cent of the total; British vessels, 23 per cent; Norwegian and Japanese vessels,  $3\frac{3}{4}$  per cent each; German vessels,  $3\frac{1}{2}$  per cent; Swedish vessels,  $2\frac{1}{2}$  per cent; and Dutch and French vessels approximately 2 per cent each. Combined, the vessels of these eight countries carried 95.4 per cent of all cargo that passed through the canal during the past fiscal year.

As compared with the fiscal year 1926, cargo carried under the American flag was greater by more than 1,500,000 tons. Cargo under the British flag, its nearest competitor, declined some 300,000 tons. The increase in tanker cargoes, largely carried under the American flag, accounts for the greater part of the increased cargo carried by vessels of American registry. The following tabulation

shows the cargo tonnage carried under the flags of the leading maritime nations contributing to canal traffic during the past four years:

*Tons of cargo carried*

	1924	1925	1926	1927
United States.....	16,654,435	13,080,200	13,710,956	15,242,156
British.....	6,051,842	5,917,058	6,750,843	6,436,785
Norwegian.....	539,101	842,708	1,051,276	1,052,453
Japanese.....	935,425	946,916	667,982	1,636,785
German.....	737,103	830,512	885,007	973,741
Swedish.....	220,517	282,447	626,266	652,173
Dutch.....	573,929	619,017	552,741	571,700
French.....	497,249	481,526	398,393	530,026
Remaining, combined.....	875,109	958,452	1,380,984	1,252,396
Total.....	26,994,710	23,958,836	26,037,448	27,748,215

With a cargo tonnage through the canal exceeding that of any preceding fiscal year, it will be noted that tonnage under the United States flag was less than in 1924, while in most instances tonnage carried under other flags has increased materially. Mineral-oil shipments, referred to above as bearing particularly on cargo tonnage carried in American vessels, although showing an increase over 1926, were more than 2,000,000 tons below 1924 shipments, and account for the decline in cargo tonnage carried by vessels of United States registry as compared with three years ago. The volume of general and miscellaneous cargoes carried in American bottoms has been gradually increasing from year to year.

Complete statistics for all flags contributing to the 1927 traffic through the canal appear in the table below:

*Commercial traffic through The Panama Canal, fiscal year 1927, by nationality of vessels*

Nationality	Number of transits	United States equivalent net tonnage	Panama Canal, net tonnage	Registered, gross tonnage	Registered, net tonnage	Tolls	Tons of cargo
Argentinian.....	1					\$1,200.00	
Belgian.....	16	71,224	79,214	105,474	68,235	75,245.31	82,558
British.....	1,351	5,392,461	6,942,555	8,797,856	5,431,833	6,452,527.30	6,436,785
Chilean.....	27	85,830	114,427	178,013	96,051	106,899.60	86,960
Colombian.....	52	18,185	21,506	30,049	18,163	22,592.25	20,917
Costa Rican.....	2	138	138	246	144	103.50	
Danish.....	46	153,048	198,432	236,832	152,607	187,640.36	261,543
Danzig.....	29	155,863	192,947	250,971	143,139	166,959.26	159,362
Dutch.....	105	433,648	575,065	699,091	424,823	542,023.19	571,700
Ecuadorian.....	6	1,187	1,210	1,916	1,201	1,322.46	1,638
Finnish.....	2	3,730	3,722	4,058	3,623	3,644.55	3,100
French.....	116	424,017	535,719	683,186	419,961	518,419.78	530,026
German.....	212	571,957	779,812	939,830	572,884	707,510.22	973,741
Greek.....	1	3,208	4,047	5,269	3,322	4,010.00	6,124
Honduran.....	1	341	425	623	348	306.00	
Italian.....	74	293,190	344,491	457,846	282,325	363,168.32	308,050
Japanese.....	165	701,983	818,310	1,033,725	685,814	862,699.61	1,036,786
Yugoslav.....	14	45,703	57,340	72,045	45,453	53,847.88	76,649
Mexican.....	1	1,569	2,159	2,876	1,892	1,961.25	2,145
Norwegian.....	265	691,481	907,675	1,115,468	685,140	808,621.74	1,052,453
Panamanian.....	105	54,115	85,371	109,427	71,478	66,844.25	87,776
Peruvian.....	63	98,785	143,157	205,555	114,987	123,125.70	107,997
Spanish.....	30	90,252	110,554	152,949	93,118	107,904.65	47,576
Swedish.....	106	285,747	394,907	794,272	343,306	329,804.98	652,173
United States.....	2,685	10,987,994	13,914,645	17,678,240	10,958,406	12,720,447.95	15,242,156
Total, 1927..	5,475	20,565,596	26,227,815	33,555,817	20,618,253	24,228,830.11	27,748,215
Total, 1926..	5,197	19,452,828	24,774,591	31,672,618	19,548,881	22,931,055.98	26,037,448
Total, 1925..	4,673	18,127,153	22,855,151	29,148,358	18,188,661	21,400,523.51	23,958,836



VESSELS ENTITLED TO FREE TRANSIT AND LAUNCHES OF LESS THAN  
20 TONS NET MEASUREMENT

Naval and other public vessels of the United States, Panama, and Colombia, and vessels transiting the canal solely for repair at the Balboa shops, are exempt from the payment of tolls, and such vessels are not included in the transit statistics in the preceding sections. They accounted for the following additional transits in the fiscal year 1927: Public vessels of the United States, 563; public vessels of Panama, 11; public vessels of Colombia, 2; vessels transiting the canal solely for repairs, 21; or a total of 597. These vessels carried a total of 228,740 tons of cargo.

If charges at commercial rates had been made against the 563 public vessels of the United States that transited the canal without payment of tolls, the revenue from tolls would have been increased by approximately \$1,275,995.25 during the year.

Launches of less than 20 tons net measurement are also excluded from the traffic statistics, although they are not exempt from the payment of tolls. The number of these transiting the canal during the year was 193, and tolls aggregating \$1,235.18 were collected for their passage.

## TRADE ROUTES AND CARGO

An analysis of cargo movements through the canal during the past year indicates strikingly the preponderance of the traffic between the two coasts of North America.

In the Atlantic-to-Pacific traffic approximately three-fourths of all the cargo tonnage moving through the canal originated on the east coast of North America and almost one-half was destined to the west coast of North America. The proportion of North American inter-coastal traffic moving in the other direction was no less striking, as more than 70 per cent of all Pacific-to-Atlantic cargo originated on the west coast of North America and slightly more than 68 per cent was destined to the east coast of North America.

With the exception of cargo to and from the west coast of South America, the volume of tonnage moving between the principal trade areas served by the canal was as great or greater than for the preceding year. Cargo en route to the west coast of South America decreased approximately 160,000 tons as compared with the fiscal year 1926, while tonnage from the west coast of South America passing through the canal was less by 470,000 tons. General shipments increased approximately 230,000 tons, but nitrates decreased over 700,000 tons.

Tonnage originating on the east coast of North America was greater by 600,000 tons, while cargo routed to the east coast of North America was greater by approximately the same amount.

Tonnage destined to the west coast of North America was greater by 210,000 tons, while tonnage originating on the west coast of North America was greater by 1,570,000 tons.

Tonnage destined to Asia was greater by approximately 400,000 tons, while cargo from Asia was greater by 110,000 tons; outbound cargo to Australasia was greater by 105,000 tons, while tonnage from Australasia passing through the canal was less by approximately 50,000 tons.

In the United States intercoastal trade the cargo movement was approximately 500,000 tons greater than in 1926, but was nearly 3,000,000 less than in 1924. Cargoes moving between the east coast of the United States and the west coast of South America declined approximately 300,000 tons as compared with the preceding year, while tonnage moving between Europe and the west coast of South America was less by 100,000 tons.

Tonnage moving between the east coast of the United States and the Orient showed an increase in both directions. Cargo moving between the Atlantic terminus of the canal and the western coast of the United States totaled nearly half a million tons, being more than double that for the preceding year.

In the tabulation below the volume of cargo tonnage moving over 11 of the principal trade routes through the canal is shown for the past four years. Combined, approximately 92 per cent of the total cargo routed through the canal during the past year passed over these routes.

*Cargo shipments through The Panama Canal during the past four fiscal years, segregated by principal trade routes*

Trade routes	Tons of cargo			
	1924	1925	1926	1927
United States intercoastal:				
Atlantic to Pacific.....	2,719,240	2,213,603	2,435,748	2,638,786
Pacific to Atlantic.....	10,808,138	7,282,656	7,633,856	7,921,719
Total.....	13,527,378	9,496,259	10,069,604	10,560,505
East coast United States-west coast South America:				
Atlantic to Pacific.....	373,348	377,864	423,730	412,835
Pacific to Atlantic.....	2,329,281	2,661,756	2,816,346	2,518,611
Total.....	2,702,629	3,039,620	3,240,076	2,931,446
Europe-west coast Canada:				
Atlantic to Pacific.....	242,279	361,792	377,446	559,138
Pacific to Atlantic.....	1,211,535	1,409,277	1,681,663	1,901,702
Total.....	1,453,814	1,771,069	2,059,109	2,460,840
Europe-west coast United States:				
Atlantic to Pacific.....	427,992	334,761	324,540	199,105
Pacific to Atlantic.....	1,231,230	1,157,556	1,331,662	1,821,255
Total.....	1,659,222	1,492,317	1,656,202	2,020,360



*Cargo shipments through The Panama Canal during the past four fiscal years,  
segregated by principal trade routes—Continued*

Trade routes	Tons of cargo			
	1924	1925	1926	1927
East coast United States-Far East:				
Atlantic to Pacific.....	1,504,275	1,234,608	1,421,214	1,576,151
Pacific to Atlantic.....	291,003	266,269	353,834	407,313
Total.....	1,798,278	1,500,877	1,755,048	1,983,464
Europe-west coast South America:				
Atlantic to Pacific.....	627,356	776,388	783,007	623,030
Pacific to Atlantic.....	1,378,501	1,708,626	1,612,733	1,326,573
Total.....	2,005,857	2,485,014	2,059,109	1,919,603
Europe-Australasia:				
Atlantic to Pacific.....	509,477	518,406	543,825	539,792
Pacific to Atlantic.....	304,370	420,356	556,871	493,425
Total.....	813,847	938,762	1,100,696	1,033,217
United States-west coast Canada:				
Atlantic to Pacific.....	130,364	178,110	199,175	267,895
Pacific to Atlantic.....	356,223	501,623	651,969	658,959
Total.....	486,587	679,733	851,144	926,854
United States-Australasia:				
Atlantic to Pacific.....	587,481	663,619	727,406	795,161
Pacific to Atlantic.....	47,777	28,195	33,087	33,758
Total.....	635,258	691,814	760,493	828,919
Crystobal-west coast United States:				
Atlantic to Pacific.....	29,061	33,877	26,251	40,484
Pacific to Atlantic.....	53,924	59,372	200,129	456,811
Total.....	82,985	93,249	226,381	497,295
East coast Canada-west coast United States:				
Pacific to Atlantic.....	111,392	132,623	271,618	354,859
Total.....	111,392	132,623	271,618	354,859
Miscellaneous routes and sailings:				
Atlantic to Pacific.....	709,227	705,369	774,755	930,950
Pacific to Atlantic.....	1,018,236	932,130	876,583	1,269,903
Total.....	1,727,463	1,637,499	1,651,338	2,200,853
Total traffic all routes:				
Atlantic to Pacific.....	7,860,100	7,398,397	8,037,097	8,583,327
Pacific to Atlantic.....	19,134,610	16,560,439	18,006,351	19,164,888
Total.....	26,994,710	23,958,836	26,037,448	27,748,215

## PRINCIPAL COMMODITIES

Precise statistics are not kept of all commodities passing through the canal because it is not required that complete manifests of cargo carried by vessels be submitted at the canal. In lieu thereof the master of each vessel is required to file a briefly itemized statement, listing the principal items of cargo carried, and showing their port of origin and destination. These itemized statements are the basis of such commodity statistics as are compiled, and, except for commodities commonly shipped in bulk, such as mineral oils carried in tank ships, wheat, barley, lumber, nitrate, etc., actual shipments are likely to be in excess of the aggregate tonnage reported during the year and

shown in the annual summary, because there is a natural tendency to list small miscellaneous shipments under the head of "General cargo," and not infrequently no other classification is made of entire cargoes carried by vessels. Subject to errors arising from this source, the tonnage of the principal commodities shipped through the canal during the past four years has been as follows:

*Commodity movement*  
ATLANTIC TO PACIFIC

Commodity	Fiscal year ended June 30—			
	1927	1926	1925	1924
Manufactures of iron and steel.....	1, 971, 964	1, 525, 280	1, 416, 135	1, 691, 712
Mineral oils.....	649, 379	721, 817	948, 451	1, 079, 137
Cotton.....	361, 241	226, 092	145, 604	100, 925
Sugar.....	282, 912	158, 997	91, 461	32, 952
Cement.....	222, 817	283, 328	359, 831	303, 724
Sulphur.....	211, 625	188, 889	165, 925	146, 712
Tin (metal).....	194, 111	202, 773	145, 188	191, 733
Railroad materials.....	189, 858	150, 993	138, 740	192, 537
Phosphates.....	183, 521	162, 254	67, 206	25, 473
Machinery.....	172, 150	134, 411	133, 024	181, 112
Paper.....	150, 722	101, 493	101, 827	90, 885
Ammonia.....	134, 977	108, 104	88, 199	78, 813
Automobiles (exclusive of accessories).....	127, 882	125, 820	124, 972	110, 351
Coal.....	96, 772	222, 288	159, 231	191, 488
Textiles.....	91, 967	78, 770	94, 132	90, 207
Coke.....	89, 750	93, 344	96, 114	90, 447
Tobacco.....	81, 457	65, 174	68, 472	71, 550
Iron (metal).....	60, 216	47, 490	51, 867	94, 746
Asphalt.....	60, 586	43, 458	34, 978	34, 639
Coffee.....	54, 018	39, 356	32, 345	48, 714
Glass and glassware.....	53, 119	44, 363	24, 826	25, 389
Auto accessories.....	53, 064	46, 132	39, 462	9, 773
Agricultural implements.....	52, 438	38, 976	40, 223	40, 529

PACIFIC TO ATLANTIC

Mineral oils <sup>1</sup> .....	7, 143, 165	5, 930, 716	5, 989, 622	9, 721, 446
Lumber.....	3, 139, 113	3, 200, 311	2, 255, 421	1, 824, 438
Wheat.....	1, 477, 376	1, 187, 384	1, 078, 844	1, 352, 388
Iron ore.....	1, 403, 737	1, 334, 408	1, 045, 383	888, 198
Nitrate.....	1, 174, 384	1, 878, 050	2, 153, 814	1, 744, 580
Canned fruit.....	403, 270	356, 609	255, 688	229, 691
Sugar.....	427, 035	318, 032	300, 465	286, 782
Copper (metal).....	357, 456	319, 045	211, 168	270, 688
Barley.....	344, 341	313, 535	236, 115	266, 859
Food products in cold storage <sup>2</sup> .....	245, 520	221, 068	202, 781	142, 830
Canned fish.....	209, 491	168, 701	165, 071	151, 201
Dried fruit.....	200, 433	150, 229	135, 832	103, 469
Wool.....	129, 906	146, 092	91, 586	84, 696
Coffee.....	113, 313	104, 739	81, 881	102, 451
Cotton.....	107, 311	65, 850	75, 358	54, 253
Fresh fruit.....	97, 969	63, 495	45, 376	25, 063
Flour.....	90, 988	64, 391	82, 402	36, 943
Lead (metal).....	84, 077	79, 734	76, 343	29, 916
Copra.....	81, 685	76, 223	90, 125	51, 115
Beans.....	73, 569	54, 565	101, 218	60, 030
Oats.....	73, 515	41, 084	37, 875	24, 916
Rice.....	71, 870	20, 664	49, 315	74, 470
Copper (ore).....	62, 436	79, 104	100, 289	85, 947
Canned vegetables.....	60, 982	28, 908	27, 391	16, 177
Skins and hides.....	58, 976	48, 479	46, 875	51, 595
Tin (ore).....	57, 092	51, 325	27, 955	24, 677
Borax.....	56, 091	51, 951	50, 428	46, 791

<sup>1</sup> Includes crude, refined, and lubricating oils.

<sup>2</sup> Does not include fruit.

In the Atlantic-to-Pacific cargo movement, reported shipments of crude and refined mineral oils, cement, tin, coal, and coke were lower than the preceding year, while the other shipments listed above were

higher. The more important increases were in shipments of manufactures of iron and steel, cotton, sugar, sulphur, railroad materials, and paper.

In the Pacific-to-Atlantic cargo movement all of the 27 commodities listed above, except lumber and nitrate, show an increase in tonnage as compared with the fiscal year 1926. Mineral oils, lumber, wheat, iron ore, and nitrate accounted for 14,300,000 tons out of a total of a little over 19,000,000 tons of cargo passing through the canal in this direction. The more important increases were mineral oils 1,212,000 tons; wheat, 290,000 tons; iron ore, 69,000 tons. Lumber decreased 61,000 tons and nitrate 703,000 tons.

#### CLASSIFICATION OF VESSELS

Of the 5,475 commercial vessels transiting the canal during the fiscal year, 4,668 were steamers, 654 were motor ships, 80 were motor schooners, and the remaining 73 were sailing ships, barges, etc. For the past four years the proportion of each class has been as follows:

	1924	1925	1926	1927
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Steamers.....	94.4	92.0	89.2	85.3
Motor ships.....	3.9	6.0	8.5	11.9
Motor schooners.....	1.0	1.1	1.2	1.5
Miscellaneous.....	.7	.9	1.1	1.3
Total.....	100.0	100.0	100.0	100.0

As indicated above, the number of motor ships transiting the canal has been increasing from year to year. The actual number of transits for the past several years has been as follows: Fiscal year 1922, 77 transits; 1923, 121; 1924, 203; 1925, 282; 1926, 443; 1927, 654.

Of the 4,668 steamers transiting the canal during the past fiscal year, 3,303 burned oil, 1,323 burned coal, and 42 were reported as fitted for either fuel. For the past four fiscal years the proportion of each class has been as follows:

	1924	1925	1926	1927
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Oil-burning.....	69.1	69.4	66.2	70.8
Coal-burning.....	30.1	30.1	33.2	28.3
Either oil or coal.....	.8	.5	.6	.9
Total.....	100.0	100.0	100.0	100.0

#### DETAILS OF THE TRADE

Further particulars of the traffic are presented in Section V of this report, in Tables Nos. 67, 68, and 69.

#### DUAL MEASUREMENT SYSTEM

Under the present law, tolls on commercial vessels using the canal are levied at \$1.20 per net ton on laden ships and \$0.72 on vessels in ballast on the basis of tonnage determined by the Panama Canal

rules of measurement, with the proviso that the amount collectible shall not exceed \$1.25 per net ton or be less than \$0.75 per net ton, as determined under the rules for registry in the United States. This requires that tonnage be determined and tolls reckoned on two bases, and as the United States rules of measurement are considered somewhat arbitrary and are subject to changes the dual system results in confusion and annoyance. Occasionally on small vessels, such as tugs, the United States rules indicate a negative net tonnage and such vessels make the transit without payment of tolls.

The canal administration has advocated consistently the adoption of the Panama Canal rules only as the basis of tolls and in recent years has suggested that if they be adopted the rates of tolls should be set at \$1 per net ton for laden ships and \$0.60 for ships in ballast, which would return approximately the same revenue as is collectible now. This plan has met opposition from operators of United States general cargo vessels for the reason that it would result in a slight increase in the charges against this type of vessel. However, for the past fiscal year the adoption of the canal plan would have increased the total tolls less than four-tenths of 1 per cent, as the additional collections would have been \$93,409.79 as compared with the actual collection of \$24,228,830.11. For all United States vessels together it would have meant a decrease of \$118,825.35. The following table shows the distribution of this increase among the vessels of the different nations using the canal during the year:

Nationality	Total actually collected under present dual system	Tolls that would have been collected under proposed rate of \$1 per ton laden and 60 cents ballast, Panama Canal measurement	Increase	Decrease
Argentina <sup>1</sup> .....	\$1,200.00	\$1,200.00	-----	-----
Belgian.....	75,245.31	66,601.20	-----	\$8,644.11
British.....	6,452,527.30	6,567,300.70	\$114,773.40	-----
Chilean.....	106,899.60	114,207.00	7,307.40	-----
Colombian.....	22,592.25	21,476.00	-----	1,116.25
Costa Rican.....	103.50	82.80	-----	20.70
Danish.....	187,640.36	188,193.60	553.24	-----
Danzig.....	166,959.26	151,673.80	-----	15,285.46
Dutch.....	542,023.19	574,264.80	32,241.61	-----
Ecuadorian.....	1,322.46	1,094.40	-----	228.06
Finnish.....	3,644.55	2,988.80	-----	655.75
French.....	518,419.78	523,039.40	4,639.62	-----
German.....	707,510.22	769,824.80	62,314.58	-----
Greek.....	4,010.00	4,047.00	37.00	-----
Honduran.....	306.00	255.00	-----	51.00
Italian.....	363,168.32	342,722.60	-----	20,445.72
Japanese.....	862,699.61	812,316.80	-----	50,382.81
Mexican.....	1,961.25	2,159.00	197.75	-----
Norwegian.....	808,621.74	833,642.60	25,020.86	-----
Panamanian.....	66,844.25	84,727.20	17,882.95	-----
Peruvian.....	123,125.70	143,568.40	20,442.70	-----
Spanish.....	107,904.65	105,688.00	-----	2,216.65
Swedish.....	329,804.98	356,955.00	27,150.02	-----
United States.....	12,720,417.95	12,601,622.60	-----	118,825.35
Yugoslav.....	53,847.88	52,538.40	-----	1,309.48
Total.....	24,228,830.11	24,322,239.90	312,591.13	219,181.34
Total difference—Increase of.....	-----	-----	93,409.79	-----

<sup>1</sup> Naval vessel on which tolls were assessed on displacement tonnage.



## HOURS OF OPERATION

The system of dispatching vessels through the canal on a time schedule was continued through the year. With reference to the provision that vessels loaded with gasoline or naphtha are not permitted to move about in canal waters during darkness or to transit the canal on such schedule as may cause them to encounter other vessels in Gaillard Cut, the practice was adopted of using place No. 3 on the northbound schedule (Pacific to Atlantic) for such vessels, as well as Nos. 1 and 2. This was brought about by the increase in traffic of tankers.

There was no further agitation during the year for placing the canal under 24-hour operation. Under present operating conditions, for vessels at the Pacific entrance awaiting transit, the ship on No. 1 schedule is dispatched through the canal so as to reach the Miraflores Locks at 7 a. m. Subsequent dispatches are made at approximately 30-minute intervals until all awaiting traffic is disposed of, except that no vessel is permitted to begin the northbound transit unless she can be dispatched so as to reach Miraflores Locks by 3.30 p. m.

For vessels awaiting transit at the Atlantic entrance, the first two ships are dispatched so as to reach the Atlantic Locks at 7.15 a. m. and 7.25 a. m., respectively. Subsequent dispatches, averaging approximately two per hour, are made by schedule until all awaiting traffic is disposed of, except that no vessel is permitted to begin southbound transit unless she can be dispatched so as to reach Gatun Locks by 2.20 p. m.

The schedules outlined above for dispatching vessels through the canal require the Atlantic Locks to be operated from 7 a. m. to 11 p. m. daily and the Pacific Locks from 6.50 a. m. to 10.50 p. m. daily. Lengthening the hours of transit necessarily would prolong the hours of lock operation, which would mean added difficulties and increased costs of operation not only at the locks, but for other divisions of the canal as well. Increase of traffic may eventually make an extension of operating hours advisable but under present conditions it is not warranted.

## LOCKAGES AND LOCK MAINTENANCE

*Lockages.*—The average number of lockages per day was 14.98 at Gatun, 15.84 at Pedro Miguel, and 15.59 at Miraflores. The total number of lockages at all locks was 16,941, as compared with 15,970 during the fiscal year 1926, and 14,480 for the fiscal year 1925.

*Hours of operation.*—At the Gatun Locks, except during the period of overhaul when one lock chamber was out of service and 24-hour operation was in effect, two shifts were on duty from 7 a. m. to 3 p. m. and one shift from 3 to 11 p. m. At Miraflores the hours of operation were from 6.50 a. m. to 10.30 p. m. and at Pedro Miguel from 7.30

a. m. to 9 p. m., with overlapping shifts to make possible double lockages between 9.20 a. m. and 5.20 p. m. at Miraflores and 9.30 a. m. to 5.30 p. m. at Pedro Miguel.

On December 29, 1926, 28 commercial ships were locked through at Gatun, which constituted a record day for commercial traffic at Gatun Locks.

At the Gatun Locks, March traffic of 661 ships with a total of 524 lockages constituted a month's record. This record traffic was handled with only one chamber in operation except for the first three days of the month.

The total delay to vessels, after entering the locks at Gatun, due to minor troubles of operation, was but four hours and 24 minutes. In no case was the delay to any lockage more than 15 minutes, and of the 32 delays that occurred during the year the average delay was eight minutes.

Lockages during the year are summarized in the following table:

	Gatun		Pedro Miguel		Miraflores		Total	
	Lock-ages	Vessels	Lock-ages	Vessels	Lock-ages	Vessels	Lock-ages	Vessels
<b>1926</b>								
July.....	440	514	463	533	455	530	1,358	1,577
August.....	457	523	491	575	478	556	1,426	1,654
September.....	439	505	468	581	461	561	1,368	1,647
October.....	441	528	472	557	465	557	1,378	1,642
November.....	418	514	438	521	434	521	1,290	1,556
December.....	441	566	482	592	475	588	1,398	1,746
<b>1927</b>								
January.....	451	554	471	580	468	570	1,390	1,704
February.....	444	551	468	559	461	576	1,373	1,686
March.....	524	661	542	638	535	648	1,601	1,947
April.....	469	582	488	606	478	606	1,435	1,794
May.....	460	546	495	600	484	603	1,439	1,749
June.....	483	597	505	626	497	625	1,485	1,848
<b>Fiscal year—</b>								
1927.....	5,467	6,641	5,783	6,968	5,691	6,941	16,941	20,550
1926.....	5,213	6,386	5,398	6,431	5,359	6,403	15,970	19,223
1925.....	4,644	5,485	4,977	5,703	4,859	5,689	14,480	16,877
1924.....	5,260	6,205	5,572	6,297	5,520	6,277	16,352	18,779
1923.....	4,011	4,638	4,267	5,017	4,273	4,960	12,551	14,615

*Overhaul.*—During the period of January 17 to April 3 each lock at Gatun was unwatered for the triennial overhaul. The west chamber was out of service from January 17 to March 1 and the east chamber from March 4 to April 2. The west chamber was out of service 43 days and the east chamber 29 days. As no work was done on Sundays and holidays, the overhaul was accomplished in 36 and 25 working days, respectively. The work was performed with the intention of inaugurating a four-year period of overhaul rather than the three-year, as has been the practice in the past. In addition to various ordinary replacements, 40 new cylindrical valves and bodies were installed. Twenty of these were purchased



in the United States and 20 were manufactured on the Isthmus by the mechanical division. A total of 600,540 pounds of bitumastic enamel and 2,525 gallons of solution were used in painting miter gates, rising stem valves, bulkheads, screens, fixed irons in culverts, and other miscellaneous places. Of the enamel, 346,940 pounds were used on exterior surfaces of gates and 111,500 pounds in the water chambers of the gates.

*Equipment.*—The installation of the automatic emergency brakes for the towing locomotives, which had been designed and tested out, was completed for all locomotives at all locks.

A fender chain composed of detachable links alternating with solid links was installed at the locks at Miraflores for trial. If this chain is successful it is planned to adopt it as standard material for the locks to replace the all-solid link chains of wrought iron.

Investigation was made of the loads bearing on the idle rollers under the outer faces of the bull wheels of the miter gate-moving machines. The findings dictated the adoption of an idler of greater capacity, and accordingly a design of a double roller to replace each single roller was made. Two of these were ordered for each set of locks and if they prove successful a general replacement of all weak rollers will be made.

Design for new arrow signals for the ends of the center approach walls was made and six were manufactured of aluminum. Two semaphore signals were installed at the sea end of Gatun Locks for the purpose of giving additional information to ships approaching. Samples of a lighter cylindrical lens with iron shields for vault lights in the ceilings of tunnels and machine rooms were purchased for test; the original installations were of heavy cylindrical lenses set in the pavement without shields, and these gradually crush into powder, requiring many renewals.

#### POWER FOR CANAL OPERATION

Electric power for the operation of the canal throughout the year was derived primarily from the hydroelectric plant at Gatun. The old Miraflores steam plant and the new Miraflores Diesel electric plant were maintained on a stand-by basis but were not required to carry load for the purpose of conserving the water in Gatun Lake. However, load was handled by the steam station 24 times and by the Diesel electric plant 22 times on account of peak load conditions and other operating requirements.

The combined generator output of the three plants averaged 5,066,243 kilowatt-hours per month, as compared with 5,031,756 kilowatt-hours per month last year. An average of 4,386,746 kilowatt-hours per month was distributed from substations, as compared with a corresponding figure of 4,231,127 kilowatt-hours per

month for the preceding year. These figures indicate a loss in transmission and distribution of 13.41 per cent, as compared with similar loss of 15.91 per cent during 1926.

The old Miraflores power plant was maintained on a stand-by basis during the first half of the fiscal year, the fires having been drawn at midnight December 31, at which time the new Diesel electric plant was advanced to such state of completion as to be capable of handling this service.

At the generating plants there were no interruptions to service during the year. Two failures of major equipment occurred; one being a 1,500 KVA transformer at Gatun substation, and the other a 2,667 KVA transformer at Cristobal substation. Both transformers have been repaired and are now back in service. On the 44,000-volt transmission line there were nine interruptions during the year.

Temporary installation was made at Gamboa of outdoor substation equipment of 3,000 KVA capacity to accommodate gravel handling operations up the Chagres River. This equipment will be removed and installed permanently at Summit for supplying current for dredging operations in the vicinity of Gaillard Cut, probably about November, 1927.

#### DIESEL-ELECTRIC PLANT

The construction work on the Diesel-electric generating plant at Miraflores was continued, and in a practical way the plant was completed at the close of the fiscal year. The erection of equipment started with the arrival of the contractor's erecting engineer in August. Two of the units were erected and available for service by the end of the calendar year and the old steam plant was completely shut down the last day of December. The switchboard erection for the new plant progressed to such a state of completion that it was possible to bring it into service the last week in January. The third engine unit was ready for service the latter part of February.

The erection of this station is the largest single construction job which has been performed on the Canal Zone since the completion of the construction of the canal and its appurtenances. The new plant is in replacement of a former steam plant which it adjoins in location, and has been installed for the sake of increased capacity and economy in operation. During such times as the water supply in Gatun Lake is adequate and except as occasional peak loads place demands on the auxiliary station at Miraflores, the electricity of the canal is generated entirely in the hydroelectric station at Gatun, placing the auxiliary plant in stand-by service. Under such conditions it has been possible to operate this auxiliary station in complete

readiness for immediate service, but with zero generator output on a fuel consumption of approximately 5 barrels for a month.

The installation consists of three units, each composed of a Diesel engine of 3,750 brake horsepower, direct-connected to a 25-cycle, 2,200-volt generator of 2,500 kilowatt capacity at 80 per cent power factor, with necessary auxiliaries. Each of the three engines with its generator and auxiliaries forms a complete unit with a length of 60 feet and a weight of 815,000 pounds. The engines are all of the 2-cycle, air-injection type, with six cylinders, each cylinder having a bore of 29 inches, a stroke of 44 inches, and operating at a speed of 125 revolutions per minute. This station is said to be the largest of its kind in the Western Hemisphere. The plant is housed in a concrete building, 78 by 141 feet in plan and 58.5 feet in height from floor of basement to bottom chord of roof truss.

#### WATER SUPPLY

Comparative data showing the inflow of water in Gatun Lake from all sources, utilization, and losses for the fiscal years 1926 and 1927 are shown in the following table:

	Per cent of total, fiscal year		Billion cubic feet, fiscal year	
	1926	1927	1926	1927
Run-off above Alhajuela.....	35.0	35.9	55.01	82.18
Yield from land area below Alhajuela.....	41.7	44.3	65.46	101.57
Direct rainfall on lake surface.....	23.3	19.8	36.66	45.47
Total.....	100.0	100.0	157.13	229.22
Evaporation from lake surface.....	13.3	8.7	20.97	20.02
Gatun Lake lockages.....	19.8	17.0	31.14	38.96
Hydroelectric power.....	26.4	19.9	41.52	45.64
Spillway waste.....	39.5	50.1	62.07	114.86
Leakage and municipal water.....	1.0	0.6	1.53	1.39
Increase or decrease in storage.....		3.7	-0.10	+8.35
Total.....	100.0	100.0	157.13	229.22

*Dry season.*—From a water-supply standpoint the 1927 dry season began about January 11 and ended April 25, a total of 105 days, during which time Gatun Lake fell from elevation 87.15 to 84.08 feet, representing a loss in storage of 14 billion cubic feet. No effort was made to save water at the Gatun hydroelectric generating plant, and only a slight saving was made in lockage water, as the indications at the beginning of the dry season were that there was no danger of a prolonged dry season such as that of 1926. Since the new Diesel plant at Miraflores was completed and it was necessary to break in the various units, some power was generated there but not with the purpose of saving water.

## ADDITIONAL STORAGE AT ALHAJUELA

From the early days of the canal the need for additional storage of water has been recognized in order that a reserve might be available in the event of a long dry season. During approximately eight months of the year much excess water enters the lake and has to be spilled into the sea. During the remaining four months the inflow is wholly inadequate to meet the demands for water which must be provided for the lockage of ships, the generation of electric power, and for municipal purposes, in addition to the heavy losses resulting from evaporation. The maximum height to which Gatun Lake may be filled is 87 feet plus. The minimum lake elevation permitting safe navigation through Gaillard Cut is 80 feet plus. This gives a margin of 7 feet of storage available for drawing upon during the dry season. With the continued increase in traffic, the time is approaching when this margin will not suffice to provide safe transit through the cut for heavy draft vessels toward the end of a dry season both extremely dry and unusually prolonged.

By the erection of a dam at Alhajuela a second basin can be created where surplus water can be stored in the rainy season to be drawn upon during the dry season to maintain the level of Gatun Lake. Recent topographical surveys show that it is feasible to build a dam about 170 feet in height, which will create a reservoir covering about 22 square miles, and provide additional storage of about 22 billion cubic feet. In addition, the reservoir would be a means of control of the Chagres River during floods in the rainy season, which are a possible menace to navigation.

It will probably require about five years to complete this project from the time appropriations become available, and it is highly desirable to proceed with the construction at an early date. The necessity for additional storage is but a matter of time in any event, and early construction will simplify present operating problems and minimize the possibilities of serious accidents or delays to shipping.

## SEISMOLOGY

Twenty-two seismic disturbances were recorded at Balboa Heights during the fiscal year ending June 30. Of these, about 64 per cent were of local origin, 22 per cent of distant origin, and 14 per cent were so slight that no estimate of the distance of the epicenter could be made. No damage was reported from any of these tremors. In the preceding fiscal year the number recorded was 36.

## MAINTENANCE OF CHANNEL AND IMPROVEMENT PROJECTS

During the year a total of 4,618,850 cubic yards of material was dredged from the canal prism, 270,150 cubic yards from the Balboa terminals, and 455,000 from the Atlantic terminals. In addition,



208,140 cubic yards of run-of-bank gravel were dredged from the Chagres River, which involved the handling of 85,600 cubic yards of silt.

The following statement shows in greater detail all material removed from the canal prism and auxiliary projects during the fiscal year:

	Cubic yards		
	Earth	Rock	Total
From the canal prism:			
Atlantic entrance.....	801,900	0	801,900
Gatun Lake.....	268,300	57,850	326,150
Gaillard Cut.....	372,750	1,525,150	1,897,900
Pacific entrance—			
Maintenance.....	707,500	63,300	770,800
Improvement project No. 1.....	244,950	577,150	822,100
Total, canal prism.....	2,395,400	2,223,450	4,618,850
Auxiliary:			
Balboa inner harbor—			
Maintenance.....	99,200	0	99,200
Improvement project No. 1.....	170,950	0	170,950
Cristobal harbor.....	455,500	0	455,500
Total, harbors.....	725,650	0	725,650
Sand and gravel service.....	293,740	0	293,740
Grand total.....	3,414,790	2,223,450	5,638,240

*Improvement project No. 1.*—The work of deepening the Pacific entrance channel from Miraflores Locks to the sea buoys from 45 feet to a ruling depth of 50 feet, mean sea-level datum, known as improvement project No. 1, was continued throughout the year at times when equipment was not needed on other work. A suction dredge removed 1,039,300 cubic yards of material from the channel and Balboa inner harbor, dredging where possible to — 50 feet mean sea level, leaving all hard material to be removed later by dipper dredges. An additional 823,750 cubic yards of material were removed by dipper dredges during the year. Two drill boats were employed 11 months each on this work, breaking up 407,407 cubic yards of rock and using 388,828 pounds of dynamite. At the close of the fiscal year the excavation on this project totaled 1,650,950 cubic yards.

A suction dredge working in Cristobal Harbor removed 455,500 cubic yards of material, all of which was pumped on Telfer's Island through pipe lines averaging 4,100 feet in length.

At the close of the fiscal year there remained to be removed from the canal prism, including siltage, slide material, and improvement project No. 1, 3,117,800 cubic yards of earth and 2,761,250 cubic yards of rock. In the Cristobal and Balboa Harbors, including improvement project No. 1, there remained to be removed 907,400 cubic yards of earth and 706,600 cubic yards of rock.



*Equipment.*—The following floating equipment was employed or held in reserve during the fiscal year: Three 15-yard dipper dredges, in service eight months each; two 20-inch pipe-line suction dredges operated 11 months each; two drill boats employed continuously throughout the year; a hydraulic grader operated four months in filling low areas in Lirio Lagoon and vicinity; a relay pump barge employed six months in connection with suction-dredge operations; two 250-ton floating cranes were operated alternate months except when the demands of the service necessitated commissioning both cranes; five large tugs and one small tug were operated continuously except when laid up for repairs; a second small tug was held in reserve. Other equipment included a ladder dredge, a crane boat, 11 launches, and an air compressor.

#### SLIDES

There was no interference with shipping on account of slides, though a number of breaks occurred during the year, with the result that considerable material entered the channel, causing shoaling and partial obstruction. The more important movements were as follows:

On July 2, 1926, a settlement occurred in a portion of the high bank at the north end of East Culebra slide, and some 16,900 cubic yards of material entered the prism. On October 6, 1926, a second slide, with an average drop of 40 feet along the back rim, occurred at this point, the toe of the slide reaching the canal axis, causing general shoaling which extended to the west bank. This new slide covered all the area involved in the old slide, and an additional area of approximately 8 acres. A general movement continued until the morning of October 8, 1926, after which only slight movements along the water edge were observed until December 27, 1926, when another general movement occurred, resulting in some material entering the canal prism and causing shoaling to the center line. No further movement was observed until June 1, 1927, when another settlement occurred and approximately 90,000 cubic yards of material entered the basin which had been dredged at the foot of the slide.

At West Culebra slide, a slow general movement and settlement continued intermittently throughout the year. On June 17 and 20, 1927, movements occurred in this slide and some 35,000 cubic yards of material entered the canal. This movement was accompanied by a settlement under Hodges Hill. During the year the dredges removed 117,400 cubic yards of material from in front of West Culebra slide and a total of 1,258,100 cubic yards from the foot of East Culebra slide, making a grand total of 29,015,860 cubic yards of material removed from these two slides to date.

On July 29, 1926, a general settlement of the high bank occurred at West Lirio slide, causing material to push into the canal about 40

feet beyond the west prism line. This slide continued its movement toward the canal during the first part of August, necessitating the removal of 81,050 cubic yards of material at that time. Again on October 15, 1926, the lower portions of this slide settled and moved toward the canal, pushing some material beyond the prism line. An additional 17,000 cubic yards of material were dredged from in front of this slide in October, making a total of 98,050 cubic yards removed during the year, and bringing the total excavation to date from this area to 1,843,820 cubic yards.

Cucaracha slide became active on the night of June 19, 1927, and the entire area, extending to the previous back break showed movement, with new cracks developing and several drops and breaks occurring. The movement continued until June 27, during which time approximately 105,000 cubic yards of material had entered the basin and 10,000 cubic yards the canal prism. On the morning of June 30, the area just north of Purple Rock broke and approximately 10,000 cubic yards additional entered the basin. Dredges removed 62,900 cubic yards in June, bringing the total excavation at Cucaracha slide to 9,197,752 cubic yards at the close of the fiscal year.

At East Lirio slide, a movement occurred on October 13, 1926, carrying material into the canal prism for a distance of 50 feet west of the east prism line. A second break occurred in November, with material pushing into the canal prism for a distance of 60 feet. During the year 27,050 cubic yards of material were removed from in front of this slide, bringing the total excavation up to 396,212 cubic yards to June 30, 1927.

Several additional small movements and breaks occurred, but the amount of material involved was relatively small. The total yardage removed from Gaillard Cut during the fiscal year was 1,897,900, of which 1,525,150<sup>7</sup> cubic yards were rock.

#### AIDS TO NAVIGATION

The maintenance of lights, buoys, and beacons established in the canal and adjacent waters was continued. On September 24, 1926, the luminosity of Bona Island Light, latitude 8° 34' 30'' north, longitude 79° 35' 30'' west, was increased from 570 to 1,500 candlepower and a sun valve was installed. With a view to effecting a saving in gas consumption, and in labor expense through less frequent recharging, sun valves were installed also on a number of gas buoys and at gas range lights.

The gas and whistling buoy located 8.6 miles north of the breakwater entrance to Cristobal Harbor was permanently discontinued June 24, 1927.

The arrangement heretofore existing between The Panama Canal and the Bureau of Lighthouses whereby the lighthouse tender U. S. S.

*Favorite* made periodic visits to and maintained the lights located at Roncador, Quita Sueno, and Serrana in the Caribbean Sea, has been discontinued. On April 1, 1927, at the instance of the Bureau of Lighthouses, the care of these lights was transferred to the ninth lighthouse district.

A buoy-tender, *Coco Solo No. 2*, built by the mechanical division of The Panama Canal, was turned over to the lighthouse subdivision during the early part of the fiscal year. This vessel is 64 feet 9 inches overall, has a beam of 15 feet 6 inches, and a depth of 6 feet 7 inches, with a loaded displacement of 90 tons. It is equipped with a 110-horsepower Diesel engine, auxiliary air compressor, two gasoline-engine generator sets for lighting, and has a one-half ton boom at the forward end for handling buoys and cargo.

#### ACCIDENTS

Investigations were conducted and reports submitted by the board of local inspectors on 60 accidents to vessels in transit through the canal or using its terminal ports. In the majority of these accidents the damages were relatively slight; there were 15 which caused damages estimated at \$1,000 or more. A classification of all accidents shows the following: Collision between ships, 4; grounded in canal, 1; struck bank of canal, 15; struck lock wall, 11; other accidents in locks, 5; incidental to assistance by tugs, 9; docking accidents, 7; miscellaneous, 8. The following is a brief description of the more serious accidents:

On July 1 the steamship *Chilore* struck west bank of canal, denting several plates and bending several frames in the forepeak tank, causing small leaks; accident caused by failure of steering gear; estimated damage, \$7,000, exclusive of dry-docking.

On July 9 the steamship *Ontariolite*, after passing another steamer in Gaillard Cut, took a sheer and struck west bank of canal, denting plates for a length of 30 to 35 feet, and suffering other damage; accident probably caused by vessel being overloaded; ship considerably damaged, but no estimate made as to cost of repairs.

On September 6 the motor ship *Buenos Aires* struck east bank of canal while endeavoring to tie up at Empire moorings; estimated damage, \$2,700.

On September 26, 1926, the tanker *Tuxpanoil* took a sheer and struck bank of canal; cause unknown; estimated damage, \$20,000.

On November 18, 1926, the steamer *La Placentia*, while leaving moorings, struck dock and tug *G. W. Getty*; caused by mistakes of engine-room personnel in executing orders from bridge; damage estimated at \$7,550.

On December 20, 1926, the steamer *Montrolite*, after passing another steamer, took a sheer and struck bank of canal, probably due to her overloaded condition; damage estimated at \$20,000.

On January 22, 1927, the steamer *Trontolite* took a sheer and collided with a Panama Canal barge and dipper dredge; the accident was caused by failure of telemotor gear; estimated damage, \$6,900.

On March 25, 1927, the U. S. S. *Stoddert*, without a pilot abroad, collided with the oil crib at Balboa, with resulting damage of \$3,350.

On April 26, 1927, the steamer *Felix Taussig* touched west bank of canal, causing damage estimated at \$2,000, exclusive of dry-dock charges; accident attributed to heavy draft of vessel with consequent difficulty in steering.

On May 26, 1927, the tanker *John D. Archbold*, in getting under way from the merchant anchorage basin in Cristobal Harbor, collided with the port side of the steamer *Sunewarkco*, causing estimated damages of \$30,000 to the latter vessel and \$15,000 to former.

On June 23, 1927, the steamer *Hororata* in leaving the east chamber of Pedro Miguel Lock took a sheer and struck wooden fender of center lock wall; cost of repairs estimated at \$3,000.

#### SALVAGE OPERATIONS

As mentioned in the report for 1926, owing to the establishment of commercial salvage companies in the Caribbean area, The Panama Canal no longer undertakes salvage operations in other than Canal Zone waters except where lives are endangered or great emergency exists. In line with this curtailed policy, the only services of this nature furnished during the year were as follows:

The tug *Tavernilla* was dispatched to the aid of the steamer *Steel Inventor*, aground about 3 miles west of the south end of Old Providence Island, Caribbean Sea, and assisted her from March 28 to 31.

The tug *Gorgona* assisted in the salvaging of the steamer *Jacob Luckenbach*, ashore off the west coast of Costa Rica, from May 8 to 16.

In addition to the above, offshore tug service was furnished on February 17, when the tug *Gorgona* was dispatched to the Pearl Islands, Gulf of Panama, to tow in the sailing ship *Tusitala*.

The expenditures charged to salvage operations for the year exceeded the revenues by \$44,534.23.

#### RULES AND REGULATIONS

The rules and regulations effective January 1, 1926, issued under Executive order of September 25, 1925, were supplemented during the year by the issuance of three supplements referring to routing of radio messages from ships approaching the canal, lights on pipe lines from suction dredges in navigable waters, and rat guards for ships at docks.



## SECTION II

### BUSINESS OPERATIONS

A detailed statement of the expenses (including depreciation), revenues, and profit or loss on the various subsidiary business operations conducted by The Panama Canal will be found in Table No. 26, Section V, of this report. The total net profit on these operations was \$876,536.80, as compared with \$841,310.29 in the preceding year, and \$765,916.85 in 1925.

The business operations of the Panama Railroad Co. on the Isthmus yielded an additional net revenue of \$1,644,187.37. In 1926 this revenue was \$1,347,887.33 and in 1925 it was \$1,525,910.13. Details of operation pertaining to the major business units of both The Panama Canal and Panama Railroad are discussed briefly in the following paragraphs:

#### MECHANICAL AND MARINE WORK

The volume of shop and marine work handled during the fiscal year was less than for either 1925 or 1926. Owing to variations in the volume of work, the number of employees carried fluctuated considerably during the year, although so far as expedient the repairs to canal and Panama Railroad equipment, the manufacture of spares for the locks, and work of a similar character was so distributed throughout the year as to provide employment for the mechanical force during the periods when the outside commercial repair work declined appreciably.

The value and class of work done, and the source of the same, for 1927, as compared with the two preceding years, are shown in the following tables:

#### AMOUNT OF WORK DONE

Class	1927	1926	1925
Marine.....	\$1,619,815.30	\$2,123,956.45	\$2,245,522.56
Railroad.....	612,276.46	629,478.27	526,149.75
Sundries.....	476,821.34	382,422.45	531,758.95
Stock materials.....	358,814.90	383,866.90	316,787.36
Total.....	3,067,728.00	3,519,724.07	3,620,218.63

#### ORIGIN OF WORK DONE

Individuals and companies <sup>1</sup> .....	\$764,619.46	\$1,001,586.00	\$1,229,868.37
The Panama Canal.....	1,324,896.56	1,473,071.54	1,481,476.19
The Panama Railroad Co.....	671,940.06	731,251.52	516,156.08
Other departments of United States Government.....	306,271.92	313,815.01	392,719.99
Total.....	3,067,728.00	3,519,724.07	3,620,218.63

<sup>1</sup> Includes Panama Railroad Steamship Line.



*Marine work.*—During the year two tugboats, named the *Chagres* and the *Trinidad*, for rivers tributary to Gatun Lake, were laid down for the dredging division and the marine division, respectively. These are Diesel-electric tugboats, 125 feet in length with chart-house control. The tugs are being built by the mechanical division, the machinery being purchased under contract in the United States. At the close of the fiscal year, the hulls were ready for launching, the deck house structures were erected in the shops, and the major part of the machinery had been delivered on the Isthmus.

An extensive overhauling was given a whaling fleet, consisting of a mother ship and five tenders, brought up from Peru for repairs. Docking and annual overhaul were given a number of small light-draft tank ships, constituting the fleet of one of the oil companies operating on the shores of Lake Maracaibo. The fleet of the West India Oil Co., operating out of Talara, Peru, also was docked and overhauled.

The various submarines stationed at the Coco Solo Submarine Base were docked and overhauled. The United States cruiser *Omaha* was docked for repairs, and a number of miscellaneous jobs covering repairs to vessels of the special service squadron stationed in local waters were executed. The work of remodeling the ends and renewing the loading sides of the dredging division dump scows was practically completed. Extensive repairs were made to dredges and tugboats in use by the canal. Several small boats were built, and the usual run of marine repairs were made on commercial vessels.

An order was received for the building of 12 barges to be used in the construction of port works at Buenaventura from parts fabricated in the United States and knocked down for shipment to Balboa. At the close of the fiscal year the construction of three of the hulls was considerably advanced.

*Other work.*—A large volume and variety of spare parts were made for use in the overhaul of the locks, and considerable shop work was performed upon parts removed and replaced during the overhaul. Two of the towing locomotives for the locks ordered in 1924 were delivered during the year; one remains uncompleted at the end of the fiscal year. During the year, a second locomotive of the Panama Railroad was converted from saturated to superheated steam. The converted locomotives have proved so successful in service that a decision was reached that as fast as the locomotive boilers need rebuilding, conversion will be made to superheated steam.

The program of converting all main line passenger equipment to 61-foot steel underframe, all mahogany equipment, was completed. The only passenger equipment not so converted consists of four small antiquated wooden coaches, approximately 45 years old, in use on

the Fort Randolph branch; this equipment will be replaced as fast as funds are available.

*Dry docks.*—A total of 146 vessels were dry-docked during the year, 77 at Balboa and 69 at Cristobal. A classification of these vessels follows:

	Balboa	Cristobal	Total
Panama Canal equipment.....	29	4	33
United States Navy vessels.....	12	7	19
United States Army vessels.....	1	7	8
Panama Railroad vessels.....	2	5	7
Commercial line vessels.....	33	46	79
	77	69	146

A notable docking of a commercial vessel was that of the oil tanker *John D. Archbold*. This is reported to be the largest tank ship afloat, and is one of the two largest vessels ever docked at Balboa shops. She was docked for repairs to rudder and steering gear damaged in a collision in Cristobal Harbor. The average tonnage of commercial vessels docked at Balboa was 2,590, and at Cristobal 408.

The days in which there were no vessels in dry dock numbered 2 at Balboa and 36 at Cristobal. These figures would have been considerably higher had not Government craft been left in dry dock at times as a matter of convenience. With the growth of shipping, the Balboa dock may be expected shortly to be required continuously for use. This suggests the necessity of enlarged dry-dock facilities at Cristobal. A survey indicates that a dock there of 475 feet in length, with appropriate depth and width, could accommodate 75 per cent of the vessels which pass through the canal.

*Plant.*—Installation of the 5,000-cubic-foot air compressor at the Balboa plant was completed during the year. The new roundhouse and sand house at Cristobal was almost completed at the end of the fiscal year, with indication that the funds allotted would allow the purchase of the new machinery and still be considerably inside the estimate. The extension to the pattern storage building was practically completed at the end of the year, and removal of the pattern shop to the lower floor of the extension had been effected.

*Financial.*—The mechanical division earned net profits of \$49,126.21 during the year, after providing funds for repairs and replacements totaling \$125,000, in which are included \$39,899.30 for reroofing buildings at Balboa shops and \$80,000 reserve for the construction of a new boiler shop at Cristobal and toward the cost of enlarging the Cristobal dry dock. Local reserves as of June 30, 1927, for replacement of machinery and dry dock, repairs to buildings and equipment, and gratuity for employees' leave, totaled \$786,048.49, as compared with \$670,051.75 for the same items at the end of the preceding year.

## COAL

Sales of coal on the Isthmus totaled 372,641 tons during the fiscal year as compared with 347,619 tons for the preceding year. Of the 1927 sales, commercial vessels purchased 365,367 tons, and the balance of 7,274 tons was sold to the United States Army, The Panama Canal, the Panama Railroad, and individuals and companies on the Isthmus.

Owing to the coal miners' strike in Great Britain last year, the cost of spot coal in the United States gradually increased from \$4.30 per ton in July to \$10.25 per ton in November, and then gradually declined to the present cost of \$4.25 per ton. To meet this increased cost, the sale price of coal at the Isthmus was increased from \$8.50 to \$12.50 per ton effective November 1, reduced to \$10 per ton effective December 6, and further reduced to \$9 per ton effective March 1, 1927.

The total receipts from sales, including charges for extra handling, etc., amounted to \$3,566,237.74 for the fiscal year, as compared with \$3,081,238.60 for 1926; while net profits from coal operations totaled \$562,280.32 as compared with \$507,663.47 for the preceding year. The sum of \$216,000 was set aside as a reserve for the repair and replacement of Panama Railroad colliers and barges.

On January 1, 1927, a new contract was made with the Ore Steamship Corporation, covering the transportation of coal from Norfolk to the Isthmus, to run for five years, at the rate of 95 cents per ton, subject to fluctuations in the trimming rate at Norfolk and penalties from delay to their steamers in transit.

During the fiscal year 35 cargoes of commercial coal and one cargo of Navy coal were received on the Isthmus. Practically all deliveries were made through the Cristobal plant and only a skeleton operating force was maintained at the Balboa plant to meet emergency demands and make deliveries to local equipment or steamers not transiting the canal.

## FUEL OIL, DIESEL OIL, GASOLINE, KEROSENE

During the year the Standard Oil Co. of New York erected two fuel-oil tanks with a capacity of 80,000 barrels each and one Diesel oil tank of 85,000 barrels' capacity at Balboa. At the close of the year the storage capacity for fuel oil and Diesel oil was 1,166,540 barrels at Balboa and 1,114,500 barrels at Mount Hope, making a total of 2,281,040 barrels.

All deliveries to and from the tanks, for private companies as well as for The Panama Canal and the United States Navy, continued to be handled through the pipe lines and pumping plants of The Panama Canal.

*Fuel oil.*—The volume of fuel oil handled, including receipts, issues, and miscellaneous transfers, is shown by the following tabulation:

	Balboa	Mount Hope	Total
	<i>Barrels</i>	<i>Barrels</i>	<i>Barrels</i>
Received by The Panama Canal.....	274,177	68,785	342,962
Used by The Panama Canal.....	248,365	90,683	339,048
Pumped for individuals and companies.....	7,499,878	8,044,352	15,544,230
Sold by The Panama Canal.....	6,086	6,102	12,188
Miscellaneous transfers.....	44,630	67,341	111,971
	8,973,136	8,277,263	16,350,399

The number of ships handled in connection with receipts and issues totaled 2,874, of which 166 were Panama Canal craft.

*Diesel oil.*—Sales of Diesel oil to vessels by The Panama Canal totaled 2,792 barrels, and sales made by the various private companies aggregated 561,189 barrels.

*Gasoline.*—During the fiscal year, 1,889,107 gallons of gasoline were received for bulk storage; of this, 694,142 gallons were stored in tanks at Mount Hope and 1,194,965 gallons were stored in tanks at Balboa. The total storage space available for bulk gasoline on the Canal Zone is 2,086,000 gallons, 616,000 of which is owned by The Panama Canal.

*Kerosene.*—Kerosene shipments received in bulk aggregated 568,045 gallons during the year; of this amount, 240,928 gallons were stored at Mount Hope and 327,117 gallons at Balboa.

The handling of mineral-oil products resulted in net profits of \$299,572.17, after deduction of operating expenses and fixed capital charges.

#### SHIP CHANDLERY AND OTHER SUPPLIES—STOREHOUSE OPERATIONS

The storehouses continued to be operated under the same policy as prevailed during the preceding year. The operating force was held at a minimum and consistent efforts were made to keep the amount of stock on hand as low as deemed prudent to meet probable needs. A small substore was opened at New Cristobal to facilitate the economical handling of building materials for the new houses under construction there. Stock on hand at the close of the year was valued at \$3,945,380.27, a decrease of \$199,487.28 as compared with the stock at the end of the preceding year.

The general storehouse at Balboa and the branch storehouses at Paraiso and Cristobal handled a total of 132,582 requisitions and foremen's orders during the year. The value of all issues for the year was \$6,526,414.46. Material and supplies sold to steamships, employees, and others aggregated \$1,217,441.78, and involved 55,120



separate sales. Business with shipping comprised sales to 3,420 vessels of material and supplies, including fuel oil, having a total value of \$134,106.36, compared with sales of \$109,590.58 to 2,818 vessels in the preceding year.

A total of 4,353 tons of scrap were sold, of which 423 tons were disposed of in the local market.

#### NATIVE LUMBER OPERATIONS

Native lumber operations were continued for the purpose of procuring lumber from native hardwood logs to be used instead of high-priced northern hardwoods. A total of 251,689 board feet of logs were purchased, of which 250,934 feet cost \$35 and 755 feet cost \$20 per thousand board feet in the log. Purchase was also made of 1,947 native hardwood railroad ties at \$1.50 each.

#### HARBOR TERMINALS

During the fiscal year a total of 2,729 vessels utilized the facilities at the terminal ports in loading, discharging, and interchanging cargoes, as compared with 2,456 vessels for the preceding year. A comparison of cargo tonnage handled, gross and net revenue from terminal activities, etc., for the past three years is given in the tabulation below:

	1927	1926	1925
Tons of cargo stevedored.....	305,506	372,760	327,237
Revenue per ton stevedored.....	\$0.3888	\$0.3570	\$0.3504
Cost per ton stevedored.....	\$0.2248	\$0.2543	\$0.2345
Tons of cargo handled and transferred.....	1,150,807	1,089,244	994,245
Revenue per ton handled.....	\$0.9580	\$0.9708	\$0.9630
Cost per ton handled.....	\$0.7894	\$0.7412	\$0.6812
Gross operating revenue.....	\$1,423,357.77	\$1,381,375.58	\$1,233,984.74
Gross operating expense.....	\$1,147,809.90	\$1,066,376.07	\$913,242.01
Net revenue.....	\$275,547.87	\$314,991.51	\$320,742.76
Per cent of expense to gross revenue.....	80.64	77.20	74.01

The distribution of business between the Cristobal and Balboa terminals is indicated below:

	Cristobal	Balboa
Number of vessels discharging or taking cargo.....	1,858	871
Tons of cargo received.....	601,264	64,705
Tons of cargo dispatched.....	437,186	16,517
Tons of cargo stevedored by Panama Railroad.....	269,156	36,400

In addition to the above business, agency duties were undertaken for various commercial steamship lines which do not maintain their own agencies on the Isthmus, and this service was furnished 353 ships transiting the canal, at the nominal agency fee of \$25 per ship.

Near the close of the year work was begun on the erection of a 50-ton stiff-leg derrick at the outer end of Pier 8, Cristobal, for handling heavy lifts.



## COMMISSARIES

The operations of the commissary division were continued along the same lines as in previous years. Very few complaints were received from patrons, and in general it is considered that the quality of the merchandise, prices, and service furnished were satisfactory to all concerned. During the last quarter of the year retail prices were reduced on practically every staple item of foodstuffs as well as on many leading staple items of dry goods.

## SALES

Every effort was made to restrict sales in the commissaries to those entitled to buy in these stores. During the year the Chamber of Commerce in Panama published charges in the United States against the commissaries, many of the statements being widely at variance with the facts, with a view to influencing the Federal authorities in Washington to curtail the sale of merchandise offered and thereby force employees to buy more goods from the merchants in Panama. This question has been fully explained to all interested parties from time to time and will not be dwelt upon here further than to state that the continued operation of the commissaries along present lines is essential to the successful operation of the canal.

Total sales to steamships amounted to \$1,308,520.02. This includes sales to United States naval vessels totaling \$486,204.67, of which approximately 35 per cent was purchases by the Battle Fleet in March, May, and June. An outstanding example of the service furnished to shipping is that in the case of the U. S. S. *Henderson* which arrived in port shortly before midnight on March 4. On the ship's arrival it was discovered that a radiogram ordering a considerable quantity of supplies had not been delivered. In the expectation that supplies might be needed, a force of commissary employees had been assembled prior to the ship's arrival, and it was possible to get out the supplies needed, approximately 14 tons, and make complete delivery by 4 o'clock the next morning, within four hours of receipt of order.

The largest single sale in many years, \$16,971.63, was made to the U. S. S. *Argonne* on January 21, 1927.

A new reinforced concrete commissary building at La Boca was completed during the year and opened for business on May 31. This new store was urgently needed to replace a very dilapidated old store remaining from construction days. The reconstructed Balboa commissary was opened shortly after the beginning of the fiscal year and provides greatly improved facilities for catering to the trade properly. Construction was commenced on a new manufacturing plant, warehouse, checking-in shed, and office building at Mount Hope, on a site adjoining the present cold-storage plant. Upon the completion of the new buildings, the offices and all the important

storage and manufacturing units will be housed at Mount Hope, which is expected to result in greater economy and efficiency of operation.

Gross receipts from the sale of commissary supplies were approximately \$400,000 in excess of 1926 sales and net profits, after deducting \$41,631.42 for the value of old canning machinery written off, amounted to \$320,754.03. The distribution of sales, as compared with the two preceding years, was as follows:

	1927	1926	1925
United States Government, Army and Navy .....	\$1,321,933.11	\$1,370,929.81	\$1,062,589.02
The Panama Canal.....	697,522.98	685,894.65	743,594.24
Steamships.....	794,689.06	766,989.50	604,656.09
Panama Railroad Steamship Line.....	264,685.11	192,360.29	249,774.64
Individuals and companies.....	697,673.98	660,336.75	731,675.58
Employees.....	5,751,234.99	5,477,106.19	4,909,983.00
Gross sales.....	9,527,739.23	9,153,617.19	8,402,272.57
Less discounts, credits, etc.....	399,159.13	421,776.19	358,170.92
Revenue from sales.....	9,128,580.10	8,731,841.00	7,944,101.65
Supplies for expense and equipment:			
Retail commissaries and warehouse.....	47,017.90	42,527.73	43,070.90
General.....	1,089.78	1,231.70	1,499.93
Plants.....	20,571.66	15,827.28	20,165.80
Total.....	68,679.34	59,586.71	64,736.63
Loss by condemnation, pilferage, shrinking, clerical errors, etc.....	207,196.15	195,113.84	128,232.60
Grand total.....	9,404,455.59	8,986,541.55	8,137,070.88

## PURCHASES

Purchases during the year aggregated \$7,356,407.48, an increase of \$788,461.30 over the preceding year. The following tabulation shows the value of the various items purchased as compared with the two preceding years:

	1927	1926	1925
Groceries.....	\$1,672,687.79	\$1,428,138.67	\$1,351,059.33
Hardware.....	565,982.22	613,123.67	586,436.39
Dry goods.....	1,174,818.42	1,035,508.32	1,134,196.45
Shoes.....	328,489.83	199,873.72	245,272.02
Cold storage.....	1,470,016.76	1,498,313.07	1,250,231.34
Tobacco.....	398,654.36	382,528.94	412,567.67
Cattle and hogs.....	445,852.08	550,711.25	473,229.49
Milk and cream.....	158,293.55	101,499.55	98,027.88
Eggs.....	220,689.73	237,233.74	249,398.85
Butter.....	326,082.08	237,872.44	230,415.72
Raw material.....	325,821.11	283,142.81	303,878.64
Toys.....	34,585.22	(1)	(1)
Dressed beef department.....	224,234.33		
Total.....	7,356,407.48	6,567,946.18	6,334,714.38
PLACE OF PURCHASE			
United States.....	5,313,970.34	4,877,886.32	4,763,216.95
Europe and Orient.....	1,030,279.83	551,756.09	555,602.69
Central and South America.....	275,702.01	234,280.61	146,306.10
Cattle industry.....	440,150.12	596,971.70	521,793.75
Panama Canal.....	112,612.75	90,993.77	112,353.77
Local.....	183,692.43	216,057.69	235,441.12
Total.....	7,356,407.48	6,567,946.18	6,334,714.38

<sup>1</sup> Included under hardware.

## MANUFACTURING PLANTS

The output of the manufacturing plants had a total value of \$1,795,127.10. The principal products of the major plants, and their value, are summarized as follows:

*Bakery.*—The output of the leading items manufactured included 3,917,247 loaves of bread, 1,739,419 rolls, 27,311 pounds of cake, 2,486 dozen doughnuts, 5,205 pies, and 106,087 pounds of soda crackers, having a combined value of \$291,733.53.

*Coffee-roasting plant.*—Among the products handled were 207,007 pounds of coffee, 18,756 pounds of corn meal, 62,454 pounds of peanuts, and 1,648 pounds of almonds, having a combined value of \$99,936.63.

*Ice cream and milk-bottling plant.*—The principal output consisted of 32,917 gallons of ice cream manufactured, 398,110 quarts of milk and 14,608 quarts of cream bottled, 165,679 Eskimo pies manufactured, having a combined value of \$164,396.89.

*Ice plants.*—Ice manufactured totaled 39,610 tons, valued at \$342,727.72.

*Laundry.*—The number of pieces handled totaled 4,741,010 and receipts aggregated \$193,805.49.

*Sausage factory and pickling department.*—The aggregate output of the various products manufactured totaled 933,849 pounds, valued at \$155,568.96.

*Industrial laboratory.*—Many new items were added to the list of products manufactured and the output was valued at \$217,130.34.

*Abattoir.*—Included among the animals slaughtered were 8,044 head of cattle and 167 hogs, and 95 turtles, the combined output being valued at \$329,827.54.

## HOTELS AND RESTAURANTS

The restaurants and silver messes continued to be operated under contract throughout the fiscal year and service at fair prices was rendered to all employees.

The Hotel Tivoli at Ancon and the Hotel Washington at Colon were operated by the supply department throughout the year. These hotels are essential adjuncts to the canal in affording accommodations to visiting Government officials, persons having business to transact with the canal, tourists, and others. An advertising folder for the hotels was printed during the year and copies were distributed to hotels and steamship agencies in all parts of the world. During the tourist season the capacity of these hotels is frequently taxed to the limit.

The Hotel Tivoli made a net profit of \$19,155.90 during the year after deduction of capital charges of \$7,581.13 and of operating ex-

penses. At the Hotel Washington the revenue exceeded the expenses by \$1,815.55, but capital charges of \$20,506.21 made a deficit of \$18,690.66 for the year.

#### BUILDING CONSTRUCTION

A considerable amount of construction of new buildings was carried on during the year and the organization for this work had to be expanded on account of several projects. These consisted principally of building 48 new cottages at New Cristobal, a new concrete ward at Corozal Hospital for the Insane, a new roundhouse at Cristobal, which was 90 per cent completed at the end of the year, and the beginning of work on a new warehouse, manufacturing plant, and building for offices of the general manager of the commissary division, which is being constructed adjacent to the present cold-storage plant and abattoir at Mount Hope. The last-named project will involve the expenditure of approximately \$1,125,000, which will come from Panama Railroad funds. The first concrete for foundations in the erection of this composite plant was poured on March 28, 1927; at the end of the fiscal year construction had advanced to 15 per cent of completion.

Work was begun on the construction of an administration building in Cristobal, near the Terminal Building, estimated to cost \$500,000. The main building will be of three stories, 160 feet long, with wings of two stories, adapted to the addition of a third story when required; one wing will be 280 feet in length, the other 124 feet. The Administration Building will provide space for the post office, police station, magistrate's court, district court, paymaster, collector, district quartermaster, Panama Railroad steamship ticket agent, land agent, and district dentist. To secure an adequate site for the building, the two-story concrete building occupied by the agency of the Royal Netherlands Steamship Co. was moved intact across a street and removal was begun of several wooden buildings, including the three-story structure formerly used as a restaurant and bachelor quarters.

The concrete commissary store at La Boca was completed, and was opened for business on May 31. Work on the Diesel-electric plant at Miraflores was practically finished at the end of the year.

With the advance of years, maintenance work on the canal buildings, especially the older ones of wooden construction, involves more labor and expenditure. Several important maintenance projects which have been authorized during the previous fiscal year were continued and completed. The largest of these items was the replacement of all deteriorated shingle roofs with standard galvanized-iron roofing. Another large item was in the painting of quarters for both gold and silver employees.



## ANIMAL AND MOTOR TRANSPORTATION

Animal and motor transportation for all departments and divisions was supplied by the transportation division, this centralization of activities permitting the reducing of both employees and equipment to the minimum necessary to meet transportation demands.

Thirty cars and trucks were purchased and six pieces of equipment were retired during the year. The equipment on hand at the end of the fiscal year consisted of 269 cars and trucks, 10 trailers, 22 motor cycles, 6 mowing machines and rakes, and 10 mules.

The division is required to operate on a self-sustaining basis. Revenues exceeded expenses for the fiscal year by \$10,940.24.

## PRINTING

The canal printing plant carries in stock and manufactures such necessary stationery, forms, etc., as are required on the Isthmus in connection with canal and railroad operations. In addition, The Panama Canal Record (an official bulletin published weekly for the dissemination of statistics and other information of interest to the shipping world), the coupon books used by employees in making purchases at the canal commissaries, and various pamphlets, circulars, tariffs, folders, etc., are printed at this plant. It is the established policy to keep the volume of printing work at the minimum compatible with the needs of the canal.

The volume of work handled during the past year was about the same as during the preceding year, though the output was valued at \$159,911.39 as compared with \$174,769.92 for 1926, the decrease of \$14,858.53 being attributable to several factors, chief among which were the privilege of making purchases of paper on the Government Printing Office contract and the reduced cost of operations following the installation of new improved machines.

The plant operates on a self-sustaining basis, and at the end of the year operations showed an excess of revenue over expenses and fixed capital charges of \$794.26.

## PANAMA RAILROAD

The gross revenues from the operations of the railroad proper amounted to \$1,638,753.66; the gross operating expenses were \$1,306,843.29, leaving a net revenue of \$331,910.37 for the fiscal year. This was an increase of \$201,099.15 in net revenue over the previous year's operations. Tonnage transported during the fiscal year, including coal, totaled 298,033 tons as compared with 288,342 tons for the preceding year.



The following table shows statistics covering various phases of operation during the past three years:

	1927	1926	1925
Average miles operated, Colon-Panama.....	47.61	47.61	47.61
Gross operating revenue.....	\$1,638,753.66	\$1,564,074.30	\$1,508,501.69
Operating expenses.....	\$1,306,843.29	\$1,433,263.08	\$1,326,433.41
Net operating revenue.....	\$331,910.37	\$130,811.22	\$182,068.28
Per cent of expenses to revenue.....	79.75	91.64	87.93
Gross revenue per mile of road.....	\$34,420.37	\$32,851.80	\$31,684.56
Operating expenses per mile of road.....	\$27,448.92	\$30,104.24	\$27,840.39
Net revenue per mile of road.....	\$6,971.45	\$2,747.56	\$3,824.17
Number of passengers carried:			
First-class.....	184,430	176,611	163,688
Second-class.....	311,343	304,652	291,578
Total.....	495,773	481,263	455,266
Passenger revenue:			
First-class.....	\$249,061.03	\$248,471.44	\$213,667.38
Second-class.....	189,206.66	194,564.59	179,839.11
Total.....	438,267.69	443,036.03	393,506.49
Revenue per passenger train-mile.....	\$5.15	\$5.18	\$4.76
Revenue per freight train-mile.....	\$11.28	\$11.98	\$12.08
Total revenue train-mileage.....	\$179,258.00	\$179,932.00	\$178,524.00
Railroad revenue per train-mile.....	\$9.14	\$8.69	\$8.45
Railroad operating expenses per revenue train-mile.....	\$7.29	\$7.96	\$7.43
Net railroad revenue per revenue train-mile.....	\$1.85	\$0.73	\$1.02
Freight, passenger, and switch locomotive mileage.....	294,994	295,156	297,433
Work-train mileage.....	1,992	1,992	1,992
Passenger-train mileage.....	103,135	104,563	105,259
Freight-train mileage.....	76,123	75,369	73,265

Toward the close of the fiscal year, the old main line track of 70-pound rail, lying between Colon and Mount Hope stations was replaced with 90-pound steel. The weed killer was operated five times during the last wet season, about 100 miles of track being treated each time. The cost of operation amounted to approximately \$13 per mile, and through its use it has been possible to dispense with the services of two laborers on each section gang.

Little change was made in the trackage in use by the Panama Railroad, The Panama Canal, and the United States Army during the year, and the total trackage in use at the close of the year was 157.70 miles.

#### TELEPHONES AND ELECTRIC PRINTING MACHINES

The change from manual to automatic operation of the telephone system was made at midnight on January 23, 1926, as noted in the annual report for 1926, and the new system has been operating satisfactorily since that date. The expense of maintaining the automatic system is approximately the same as for maintaining the old manual system, but there has been a marked decrease in the expense of operation due to reduction in the number of exchange operators.

The gross revenue from the operation of telephones, electric clocks, and electric typewriting machines was \$222,281.48 for the fiscal year; operating expenses were \$197,959.86, leaving a net revenue of \$24,321.62.

During the fiscal year 889 telephones were installed and 970 were removed, resulting in a net reduction of 81 telephones for the year. Excluding 223 telephones in the Hotel Tivoli and the Hotel Washington, there were 2,665 telephones in service at the end of the fiscal year.

*Electric printing machines.*—Fourteen electric printing machines were in service at the close of the year, 10 of which were being used by The Panama Canal, and two each by the United States Army and the Republic of Panama.

#### LANDS AND BUILDINGS

Panama Railroad lands in the cities of Panama and Colon and public lands in the Canal Zone are administered by a joint land office.

*Panama Railroad Company lands and leases.*—At the close of the fiscal year, 1,306 leases and 18 licenses granted by the Panama Railroad Co. covering the use of its property in Panama and Colon were in effect. The income derived from these leases and licenses during the year was \$189,566.05, representing an increase in revenue of \$10,262.55 over the preceding year.

Three tracts of Panama Railroad land in the city of Panama not required for business purposes, comprising a total of 8,189.2 square meters, were sold during the fiscal year. The aggregate price was \$220,208. Building No. 1000 in Colon was sold for \$156,690 without the land on which it is situated.

*Agricultural lands in the Canal Zone.*—A total of 2,019 licenses, covering 6,801.5 hectares of agricultural lands in the Canal Zone, were in effect on June 30, 1927. The rental from these lands for the year aggregated \$34,742.09, of which \$1,357.50 was outstanding at the close of the fiscal year. The average holding under these licenses was 3.36 hectares (8.3 acres) per licensee. Great difficulty was experienced in the collection of rentals, due to the poor production of the farms resulting from the prolonged dry season of 1926.

*Alhajuela Basin.*—Of the three claims for land and improvements remaining unpaid at the close of the previous fiscal year, two were settled for a total of \$1,760.82, and a partial payment of \$522.50 was made on the other, leaving a balance of \$200 due the only remaining claimant.

The gross revenue realized from all real estate operations handled by the joint land office amounted to \$220,950.64, not including \$220,208 derived from sales of property. These figures do not include the rental on the oil tank sites at Mount Hope and Balboa, nor the sites held under license in the Canal Zone by individuals and companies on which office buildings and residences are maintained. Neither do they include rentals for quarters occupied by employees of The Panama Canal and Panama Railroad.

## PLANT INTRODUCTION GARDENS AND EXPERIMENTAL STATION

The plant introduction gardens and experimental station were established in June, 1923, and the work to date has involved primarily the securing and planting of a large number and variety of useful and ornamental plants from all parts of the world with a view to determining their value for general propagation on the Isthmus. The work is yet in its infancy and sufficient time has not elapsed to demonstrate the merits or demerits of the many plants introduced. The following brief comment covers some of the more important plantings:

*Bananas*.—The most serious problem of the banana industry encountered on the Isthmus is the control of wilt disease, and one of the possible means of obviating the losses from this malady lies in the adoption of resistant varieties. Several varieties in different parts of the world are known to possess more or less resistance to the disease and studies are now in progress to determine their possibilities locally as commercial bananas as well as to observe the degree of resistance which they may offer. Three such varieties now under observation are the *Cavendish*, the *Congo*, and a variety believed to be the Philippine *Bungulan*.

*Abaca*.—The abaca or Manila hemp plant is well known as the source of the best cordage fiber of commerce, as it withstands salt water better than any of its competitors. Up to the present time the Philippine Islands have enjoyed a monopoly of this market. Several attempts have been made to introduce this species in the American tropics. Introductions of plants and of seeds on the Isthmus have been made through the Department of Agriculture, but, unfortunately, two of the important introductions arrived at the close of the rainy seasons in 1923 and 1925 and, consequently, made a poor start, but with the abundant rains of the present season they are now giving promise of success. Suckers are also being transplanted to other parts of the Isthmus less subject to drought.

*Chaulmoogra-oil trees*.—There are several species of trees which yield oils rich in chaulmoogric or hydnocarpic acids. It is these oils or their esters which have proved so effective in recent years in the control of leprosy. Of these species there are represented at the experimental gardens the following: *Taraktogenos kurzii*, *Hydnocarpus anthelminthica*, *H. wightiana*, *Oncoba echinata*, and *O. spinosa* (oil content not yet known).

A planting of about 800 trees of the species *Taraktogenos kurzii* was made in June, 1924, at Flat Rock, on the south bank of the Chagres River. There are about 700 trees now growing in this plantation on a little less than 10 acres of land and most of them have made a very satisfactory growth. Measurements of a large number

of these trees in July, 1927, showed an average height of over 7 feet 8 inches. Only a few specimens of the remaining varieties have been planted.

*Rubber.*—Trees of the *Hevea braziliensis* are under observation at Summit and elsewhere.

*Avocado.*—Many young seedlings of this remarkable fruit tree have been budded to the best varieties available on the Isthmus so as to continue their dissemination. It is of great importance to introduce the best varieties, and by a proper selection to extend the season so that the local market can be supplied through a considerable part of the year with fruit of first quality, free from fibers, and of good texture and flavor.

*Mango.*—Several of the introduced varieties of mangoes are now bearing fruit, but it is yet too early to make any confident recommendation as to the varieties best adapted to the Canal Zone and Panama.

*Mangosteen.*—The mangosteen is regarded by many as the best of all tropical fruits. The young trees that have been introduced through the Department of Agriculture have made an excellent growth.

*Java grass (Polytrias præmorsa).*—This grass is proving effective in crowding out the taller-growing and coarser Guinea grass (*Panicum maximum*). It also gives promise of being of value on golf links and upon airplane landing fields as well as on lawns. The demand for roots and cuttings is great and it is being distributed continuously through the rainy season.

Accessions for the year included 72 species. Several thousands of fruit-bearing or ornamental trees and shrubs have been placed in various parts of the Canal Zone and in Panama, and exchanges have been maintained with foreign countries.

#### QUARTERS FOR EMPLOYEES

*Gold employees.*—In the Balboa and Cristobal districts the demand for gold quarters was greater than the supply during most of the year, there being on the average about 30 applicants on the waiting list at each of these places. In the Pedro Miguel and Gatun districts it was possible ordinarily to supply quarters to applicants within about 30 days from date of application.

The construction of 48 new cottages at New Cristobal was authorized during the year. Thirty-four of these were completed, and the remaining were near completion at the close of the year.

The replacement of deteriorated shingle roofs on gold quarters with standard galvanized-iron roofing was completed during the year and all the metal roofs on permanent buildings were painted. Avail-



able funds did not permit the painting of all exterior woodwork that needed painting. The established rental rates were collected for all gold quarters occupied. The revenue received was sufficient for necessary maintenance of the buildings, which included some painting for preservation, but there was not sufficient revenue to provide any interest on the capital invested. A charge of 2 per cent of the capital value, however, was made as part of the operating expenses to provide a reserve for replacement.

*Silver employees.*—There is a shortage of quarters for silver employees in all districts. During the year a one-story silver bachelor quarters building was removed from the site of the new Administration Building at Cristobal and reerected at Camp Bied. Another three-story 48-room gold bachelor quarters building is being removed from this site and will be reerected at Camp Bied for use as silver quarters.

The operation of silver quarters was continued without change of regulations or policy. The cost of maintaining and operating silver quarters exceeded the rents collected by \$95,000. The maintenance costs during the year were comparatively heavy on account of necessary exterior painting of the permanent type buildings and heavy expenses for replacement of worn-out shingle roofs with standard galvanized-iron roofing. The roof replacement work was completed during the year.

#### CLUBHOUSES

To the maintenance of clubs and playgrounds for American and West Indian employees and their families, The Panama Canal contributed \$120,000. The additional expenses defrayed from current revenue were \$472,711.99, and the income from moving pictures, soda fountains, candy and cigar counters, swimming pools, tennis courts, and other activities promoted was \$469,640.09. The accumulated surplus of clubhouse funds on June 30, 1927, was \$105,316.69. Additional detail of income and operating expenses may be obtained from Table 42, Section V, of this report. Report of activities is in Section IV.

#### FARM INDUSTRIES

*Plantations.*—All plantations were operated under contract during the fiscal year, with the exception of the citrus fruit farm at Juan Mina comprising some 50 or 60 acres. The gross revenue received during the year amounted to \$5,258.69, while operating expenses totaled \$7,774.13, resulting in a loss of \$2,615.44.

*Dairy farm.*—The gross revenue accruing from the sale of cattle, milk, cream, and other products totaled \$69,920.82 for the fiscal

year; operating expenses amounted to \$69,603.36, leaving a net profit of \$317.46 as compared with a loss of \$3,654.61 for the previous year. The total milk production for the year amounted to 78,017 gallons, of which 71,939 gallons were disposed of through the commissaries. The general health of the dairy cattle throughout the year was excellent.

*Cattle.*—At the beginning of the fiscal year, owing to the rapid advance in the cost of cattle in Colombia, heretofore the principal buying market, and the revolution in Nicaragua, it did not appear possible to purchase sufficient lean cattle to restock the pastures with the usual reserve of four or five thousand head. Consequently, contracts were made for the purchase of frozen beef, taking delivery over a period of six months, this providing for a surplus in refrigeration instead of on pastures.

This procedure necessarily curtailed the killing program and reduced the operating profits with the results that net losses for the year amounted to \$16,254.85.

In December a contract was made for the purchase of 3,000 head of Venezuelan lean cattle with a subsequent contract in May for 4,000 more, and the indications are that this market will prove satisfactory.

On July 1, 1926, 5,952 head of cattle were in the pastures. During the fiscal year, 8,084 head were purchased and 116 calves were born; 7,733 head were slaughtered, 278 died, 129 were transferred to the dairy, 104 were sold to outsiders, leaving 5,908 head on hand in the pastures at the close of the fiscal year.

During the year a total of 19,289 acres of pasture were recleared or burnt at an average cost of \$2.87 per acre. This reclearing resulted in considerable improvement in the stand of grass on the pastures.

#### OPERATIONS WITH PANAMA RAILROAD CO.'S FUNDS

Many of the business activities on the Isthmus connected with the canal are conducted with funds of the Panama Railroad Co. Included in these are the wharves and piers at the harbor terminals, the commissary system, coaling plants, and various minor activities as well as the Panama Railroad itself. In this report only the major features of these operations are noted, in their relation to the canal administration as a whole. Details are given in the annual report of the Panama Railroad Co., which is published separately.

The operations of the railroad proper, harbor terminals, coaling plants, stables, and baggage transfer were continued throughout the fiscal year under the direction of the superintendent of the railroad; the telephone system under the electrical engineer of The Panama

Canal; renting of lands and buildings under the land agent; and the commissaries, Hotel Washington, plantations, dairy farm, and cattle industry under the chief quartermaster of The Panama Canal.

#### PANAMA RAILROAD STEAMSHIP LINE

The gross operating revenue of the steamship line for the fiscal year ending June 30, 1927, amounted to \$2,026,875.91, and the total operating expenses to \$2,075,843.68, resulting in a net deficit from operation of \$48,967.77. This operating deficit compared with that of the fiscal year ended June 30, 1926, of \$285,349.26 shows a decrease in deficit of \$236,381.49.

The steamship line carried all freight and passengers for account of The Panama Canal and other departments of the Government of the United States at material reductions from tariff rates, which amounted to the important sum of \$484,028.93. Had regular rates been charged by the steamship line for such freight and passenger service rendered to The Panama Canal and other branches of the Government, its operating deficit of \$48,967.77 would have been reversed, and a profit of \$435,061.16 shown.

For the year ended June 30, 1927, the tonnage carried amounted to 205,196 tons as against 258,448 tons for the previous year, a decrease of 53,252 tons.

#### CANAL ZONE FOR ORDERS

The system of shipping cargo to the Canal Zone subject to the orders of the consignor or consignee after arrival was established March 17, 1925. Under this system merchandise may be shipped to Canal Zone terminal ports to be there held for orders, the Panama Railroad Co. acting as warehouseman. Such cargo or integral parts thereof may be withdrawn and delivered locally or forwarded as the consignor or consignee may desire, except that goods for use in the Canal Zone or the Republic of Panama by others than those entitled to the free entry privilege are released only upon the presentation of satisfactory evidence of the payment of the proper duty to the Republic of Panama.

This system is proving of great convenience to all concerned and the volume of business is increasing. During the fiscal year 1927 the number of receipts issued was 602; number of withdrawals, 3,641 tons received, 8,200; tons withdrawn, 6,125; packages received, 76,316; packages withdrawn, 77,885. The following is detail of the operations by months at Cristobal and Balboa.

## CRISTOBAL

Month	Number of receipts issued	Number of with- drawals	Tons received	Tons with- drawn	Packages received	Packages with- drawn
July.....	26	179	187	232	4,394	5,194
August.....	26	178	281	211	5,693	4,442
September.....	32	145	141	138	2,520	2,717
October.....	21	167	389	184	5,497	4,538
November.....	26	185	225	288	7,890	4,762
December.....	38	168	212	252	3,506	5,605
January.....	35	189	202	179	3,813	3,609
February.....	43	245	476	291	6,062	5,228
March.....	57	329	365	434	5,962	7,217
April.....	34	261	1,038	349	4,744	5,779
May.....	39	226	304	704	4,754	7,286
June.....	62	227	2,137	1,137	4,783	5,585
Total.....	439	2,499	5,957	4,399	59,618	61,962

## BALBOA

July.....	9	40	50	42	653	576
August.....	15	69	308	164	1,147	700
September.....	6	64	98	71	1,108	1,039
October.....	5	92	38	214	364	962
November.....	11	63	14	80	998	1,135
December.....	18	89	306	357	1,303	1,140
January.....	20	82	773	116	1,901	1,574
February.....	15	103	63	106	1,401	1,058
March.....	13	168	139	172	1,879	2,317
April.....	16	100	112	94	1,248	1,263
May.....	19	103	171	84	2,085	1,048
June.....	16	169	171	226	2,611	3,111
Total.....	163	1,142	2,243	1,726	16,698	15,923



## SECTION III

### GOVERNMENT

The civil government of the Canal Zone is conducted as prescribed by the Panama Canal act of August 24, 1912, and other acts and Executive orders applicable to the Canal Zone. In some cases it has been found practicable to assign governmental functions to departments organized primarily for the operation and maintenance of the canal, which has resulted in both economy and closer co-operation.

Data on the cost and revenues of various branches of the governmental service are contained in Section V, devoted to financial and statistical statements.

#### POPULATION

A census of the civil population of the Canal Zone was taken by the police force during the month of June, 1927, a summary of which is given below:

	Americans					All others					Grand total
	Total men	Em- ploy- ees	Total women	Em- ploy- ees	Chil- dren	Total men	Em- ploy- ees	Total women	Em- ploy- ees	Chil- dren	
Balboa district.....	1,810	1,609	1,891	327	1,894	3,496	2,113	2,502	55	4,860	16,453
Cristobal district.....	543	502	610	22	691	3,163	2,053	1,960	48	4,075	11,042
Prisoners.....	22					102		2		3	129
Total fiscal year 1927.....	2,375	2,111	2,501	349	2,585	6,761	4,166	4,464	103	8,938	1 27,624
Total fiscal year 1926.....	2,316	2,087	2,664	353	3,010	6,880	4,375	4,373	46	8,449	1 27,692

<sup>1</sup> Includes 72 civilian employees of the Army and Navy in 1927 and 91 in 1926.

In addition to the civilian population listed above, the military and naval forces in the Canal Zone in June, 1927, numbered 8,976, making a total population of 36,600.

#### PUBLIC HEALTH

*Malaria.*—The total number of malaria cases reported from the Canal Zone and terminal cities during the year, compared with the six previous years, follows on next page.

	1927	1926	1925	1924	1923	1922	1921
Employees.....	155	<sup>1</sup> 312	180	208	216	176	325
Military and naval personnel.....	739	854	762	894	870	828	810
Nonemployees.....	420	445	494	521	657	243	459
Total.....	1,314	<sup>1</sup> 1,611	1,436	1,623	1,743	1,247	1,594

<sup>1</sup> Omitting the cases from Bruja Point, where a gang of men was engaged in construction work for the Army and housed in a temporary camp outside the sanitated areas, the number of employees reported with malaria was but 188 and the total number of cases 1,487. Over half of the men employed at Bruja Point developed malaria within 5 months, and this furnished a very good example of what would occur throughout all the villages and settlements in the Canal Zone should our sanitary measures be relaxed.

There were no deaths among employees from malaria during the year. The last death of an employee from malaria occurred in 1924.

*Canal Zone.*—The population of the Canal Zone (civil and military) on July 1, 1926, was 36,988, and this figure has been used as a base for vital statistics. From this population 284 deaths occurred during the year, 253 of which were from disease, giving a rate of 6.84 for disease alone, as compared with 6.87 for 1926 and 7.17 for 1925.

There were 611 live births reported during the year, and 26 stillbirths. Including stillbirths, this is equivalent to an annual birth rate of 17.22 per 1,000 population. The infant mortality rate, based on the number of live births reported for the year, was 44.78 for white children and 136.59 for colored children, with a general average of 106.38. Of the total births reported, 4 per cent were stillbirths. Of the total deaths reported 29 per cent occurred among children under five years of age.

The maternal mortality rate (from conditions due to the puerperal state) was 14.3 per thousand births, stillbirths included.

*Panama City.*—The estimated population of the city of Panama for the year was 59,635. From this population, 1,246 deaths occurred during the year, of which 1,208 were from disease, giving a rate of 20.26 for disease alone, as compared with 18.33 for the preceding year.

The principal causes of death, compared with the past few years, were as follows:

	1927	1926	1925	1924	1923
Pneumonia (broncho and lobar).....	209	154	187	276	128
Tuberculosis (various organs).....	199	201	201	193	218
Diarrhea and enteritis.....	149	85	90	121	144

There were 2,192 live births reported during the year and 112 stillbirths. Including stillbirths, this is equivalent to an annual birth rate of 38.64 per 1,000 population. The infant mortality rate, based on the number of live births reported, was 136.24. Of the total

number of deaths reported, 38 per cent occurred among children under five years of age. The maternal mortality rate (from conditions due to the puerperal state) was 6.94 per thousand births, stillbirths included.

*Colon.*—The estimated population of the city for the year was 31,285. From this population, 441 deaths occurred during the year, of which 427 were from disease, giving a rate of 13.65 for disease, as compared with 12.50 for 1926.

The principal causes of death, as compared with the past few years, were as follows:

	1927	1926	1925	1924	1923
Tuberculosis (various organs).....	76	71	87	57	79
Pneumonia (broncho and lobar).....	50	36	54	42	40
Diarrhea and enteritis.....	17	26	27	33	26

There were 723 live births reported during the year and 52 stillbirths. Including stillbirths, this is equivalent to an annual birth rate of 24.77 per 1,000 population. The infant mortality rate, based on the number of live births, was 118.95. Of the total births reported, 7 per cent were stillbirths. Of the total deaths, 26 per cent occurred among children under 5 years of age. The maternal mortality rate (from conditions due to the puerperal state) was 20.65 per thousand births, stillbirths included.

*Canal hospitals.*—Patients treated in Panama Canal hospitals, fiscal year 1927:

	Number in hospital July 1, 1926		Admitted		Died		Discharged		Transferred		Remaining June 30, 1927	
	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
Ancon.....	174	167	4,582	3,502	82	182	4,469	3,233	21	67	184	187
Colon.....	13	34	870	1,380	25	55	728	1,142	103	178	27	39
Corozal:												
Insane.....	110	315	79	151	1	28	65	47	2	11	121	380
Cripples.....	4	25	1	14	0	0	0	5	2	11	3	23
Chronic.....	3	35	0	10	0	4	0	5	0	4	3	32
Palo Seco Leper Colony.....	6	92	3	8	0	3	1	0	1	0	7	97
Total.....	310	668	5,535	5,065	108	272	5,263	4,432	129	271	345	758

<sup>1</sup> Elopéd.

#### QUARANTINE AND IMMIGRATION SERVICES

As in former years, an effective quarantine was maintained with very slight delay to shipping. No quarantinable disease was intro-

duced into the Canal Zone. Only one ship of the total of 7,185 entering the canal ports suffered any detention and that was for one day. During the preceding year, of 6,483 ships entering, four were detained an aggregate of three days.

The quarantine embargo prohibiting the introduction of certain animals and articles that are liable to be carriers of foot-and-mouth disease remained in force against all of the countries of South America except Colombia, Venezuela, British Guiana, and Dutch Guiana throughout the year. Under date of May 2, 1927, that part of the Republic of Mexico situated south and east of the Tehuantepec National Railroad, which crosses the Isthmus of Tehuantepec, was included in the areas under this quarantine.

The physicians employed as quarantine officers act also as immigration officers. In this function they are concerned principally with the exclusion of members of races whose entry into Panama is prohibited and the exclusion of undesirables or of persons liable to become a public charge.

The activities of the quarantine division during the fiscal year 1927 are summarized as follows:

	Cristobal	Balboa	Total
Vessels inspected and passed.....	4,091	744	4,835
Vessels granted radio pratique.....	172	88	260
Vessels passed on certificates of masters.....	20	2,069	2,089
Vessels detained in quarantine (1 ship, 1 day).....	1	0	1
Total vessels received.....	4,284	2,901	7,185
Supplementary inspections of vessels.....	3,852	1,312	5,164
Vessels fumigated.....	93	40	133
Crew inspected and passed.....	240,507	35,187	275,694
Crew passed by radio.....	50,466	24,530	74,996
Crew passed on certificates of masters.....	3,658	95,434	99,092
Crew detained in quarantine (1 ship, 1 day).....	116	0	116
Passengers inspected and passed.....	88,185	13,405	101,590
Passengers passed by radio.....	364	0	364
Passengers passed on certificates of masters.....	12,452	21,739	34,191
Passengers detained in quarantine (1 ship, 1 day).....	64	0	64
Total persons received.....	395,812	190,295	586,107
Persons deported under immigration laws.....	784	343	1,127
Persons detained account immigration laws and later allowed to enter or to resume their journey for which they transhipped here.....	209	1,259	1,468

#### MUNICIPAL ENGINEERING

*Water supply.*—On January 1, 1927, the water system on the west side of the canal, supplying Camp Gaillard and Las Cascadas, was turned over to the United States Army to operate. The municipal division, however, continued to operate the Cucaracha pumping station. The water line running from Gatun Dam to Toro Point, which supplies Fort Sherman with water, also was transferred to the United States Army. Filtered water for the fort is still supplied from the Agua Clara filtration plant.



The improvement of the Cristobal-Colon and the Gatun-Fort Davis water systems was completed during the year. This resulted in the abandonment of Brazos Brook and Agua Clara Reservoirs. The new system secures raw water from Gatun Lake.

A filtration system was constructed at Gamboa, adjoining the pumping station, to filter the water from the Chagres River supplied to the various canal activities at Gamboa. It will be operated by the force already required at the pumping station.

The amount of water consumed during 1927, as compared with the two preceding years, is shown in the following table:

	1927	1926	1925
	<i>Gallons</i>	<i>Gallons</i>	<i>Gallons</i>
Canal Zone.....	3, 087, 507, 913	3, 000, 372, 000	3, 140, 009, 765
City of Panama.....	1, 211, 019, 000	1, 163, 545, 000	1, 117, 982, 000
City of Colon.....	628, 014, 000	575, 429, 000	586, 325, 000
Sales to ships.....	143, 297, 227	144, 191, 672	132, 942, 685
Total.....	5, 069, 838, 390	4, 883, 537, 672	4, 997, 259, 450

*Sewers.*—Other than the usual maintenance work performed during the year, the extension of the storm sewer from intersection of Second and Bolivar Streets, Colon, to the sea was completed; additional storm sewers were constructed at the Balboa railroad station to prevent flooding in time of heavy rains; and an extension to the sea wall at Fort DeLesseps was constructed to eliminate sanitary nuisance complained of by the Army.

*Roads, streets, and sidewalks, Canal Zone.*—Ordinary maintenance required the repairing of 8,405 square yards of various classes of roads and streets, and the chipping and asphaltting of 74,618 linear feet of cracks in concrete roads. In addition, a considerable number of dangerous curves were eliminated or widened. The program of constructing sidewalks paralleling the principal streets and avenues was continued. A parking place was constructed adjacent to the locks at Pedro Miguel to take care of automobiles transporting tourists landing there after a trip through the Cut, and for traffic using the Army ferry.

*Garbage disposal.*—The incinerator at Mount Hope was operated until February 7, 1927, when it was shut down. At the close of the fiscal year garbage in both the northern and southern districts was being dumped on waste land and buried.

*Cities of Panama and Colon.*—The necessary maintenance and new construction work in connection with the water and sewer systems and the streets of Panama and Colon were carried out. Revenues received from the sale of water in the two cities is applied to meet

bills arising out of the maintenance of the water and sewer systems and streets, and if there is a deficit it is billed against the Republic of Panama. In Colon, municipal improvements were made on vacant lots owned by the Panama Railroad Co. on the east side of Broadway between Tenth and Thirteenth Streets, which makes them available for lease. The cost of this work was paid by the company.

*Army and Navy.*—Various jobs, such as the building and repair of concrete roads, seaplane runways, alteration and extension of water systems, repairing of docks, air and water lines, etc., were performed for the Army and Navy during the year.

*Miscellaneous.*—Some of the more important miscellaneous work handled included the installation of additional oil lines between the oil-handling plant at Balboa and Docks 6 and 7; the construction of road and the installation of oil and water lines for the new Miraflores Diesel electric plant; and the construction of fences around the Gatun, Pedro Miguel, and Miraflores Locks; and construction of roads and sidewalk and installation of water and sewer lines for the new warehouse and manufacturing plant of the commissary division at Mount Hope.

*Laboratory.*—The testing laboratory at Miraflores carried on a wide variety of work, in which were included inspection of the holds of general cargo carriers, in case of cargo damaged by water and fire, and of tankers, prior to the beginning of work on them, and tests and analyses of samples of concrete, asphalt, asphalt wearing surface, mixed paints, paint materials, fuel oil, lubricating oil, gasoline, kerosene, turpentine, cement, sand, gravel, tar, coal, coke, soap, lime, ores, steel, gas, electrolyte, water, alcohol, and many others, the total number of samples analyzed being 2,022. Work was performed for a number of individuals and companies in Central and South America.

#### PUBLIC ORDER

During the year 3,045 persons were arrested, of whom 188 were females. Of these, 2,177 were convicted, 299 dismissed, 17 were under trial at the end of the year, and 652 were disposed of otherwise on proper authority.

The more common causes of arrest were violations of the vehicle and traffic regulations, 934 cases; violation of immigration regulations, 375; disorderly conduct, 341; intoxication, 181; petit larceny, 134; loitering, 120; assault, 86; fighting, 81; violation of the national prohibition act, 71. The persons arrested included representatives of 79 countries and territories and 166 different trades and professions.

There were two homicides during the year, one each of voluntary and involuntary manslaughter. There were four suicides, two of whom were white American employees of the canal. Deaths investi-

gated by the coroner during the year numbered 63; accidental drowning was found as the cause of death in 20 instances.

The average total number of prisoners in the common jails at the close of each month was 66. Those prisoners were employed in clearing trails, on road repairs, and on janitor and miscellaneous work at police and fire stations. The labor performed by them was valued at \$22,535.31

Fifty-seven convicts were committed to the Canal Zone penitentiary during the year, with sentences aggregating  $156\frac{3}{4}$  years; 38 convicts were discharged, 6 were pardoned, and 4 were released under parole. Labor performed by convicts during the year, valued at standard rates of pay, amounted to \$26,571.55; they were employed principally on road improvements, and in the cultivation of fruits, vegetables, etc., at the penitentiary farm. At the close of the year 87 convicts remained in custody, as compared with 68 at the close of the previous year.

Four arrests were made under the narcotic drugs import and export act, three of which resulted in convictions. One arrest was made for violation of the white slave traffic act, and resulted in acquittal. Forty-three persons were deported from the Canal Zone during the year; of these, 34 were convicts who had completed terms of imprisonment and 9 were persons who had been convicted of misdemeanors or who were deemed undesirable persons to be permitted to remain on the Canal Zone.

Traffic accidents on the Canal Zone numbered 303, resulting in injuries to 65 occupants of cars and vehicles and 26 pedestrians, among whom three deaths occurred. A classification of these accidents shows that practically all were avoidable, 254 being due to careless or reckless operation of vehicles, 22 to careless pedestrians, and 9 to intoxicated drivers. In only three instances was the accident caused by defects in the mechanism of the cars.

In addition to the routine police work in the Canal Zone villages, a continuous patrol of the harbors of Balboa and Cristobal was maintained throughout the year, principally for the enforcement of navigation regulations and for the prevention of smuggling and irregular traffic. Police launches were maintained also for the patrol of the Chagres River and Gatun Lake, and details of police officers were continued throughout the year at all canal locks and at the spillway at Gatun. Monthly patrols of the interior sections of the Canal Zone were continued to determine if any unauthorized clearings or cultivations were being made, or any unauthorized new buildings were being constructed. Motor-cycle patrols for special emergency service and for the enforcement of the vehicle traffic regulations were maintained at various points.

## OFFICE OF DISTRICT ATTORNEY

The district attorney and his assistant prosecuted 204 criminal cases before the district court, with 168 convictions, 20 acquittals, and 16 cases dismissed. There were 17 criminal cases pending at the close of the fiscal year. Of the criminal cases prosecuted, 38 were for violations of the national prohibition act, 29 for endeavoring to make revolt at sea, 26 for burglary, 17 for conspiracy, and 14 for assault.

The district attorney represented The Panama Canal or the United States Government in 11 civil cases, two of which were still pending at the close of the year.

## DISTRICT COURT

Sessions of the district court were held at Ancon and Cristobal, and the following business was transacted during the fiscal year:

Cases pending July 1, 1926—civil, 28; probate, 84; criminal, 27. Cases filed during the year—civil, 93; probate, 208; criminal, 138. Cases settled during the year—civil, 83; probate, 215; criminal, 152. Cases pending June 30, 1927—civil, 38; probate, 77; criminal, 13.

Of the civil cases disposed of, 50 were decided and 33 dismissed; of the criminal cases disposed of, 4 resulted in acquittal, 128 in conviction, and 20 were dismissed.

Marriage licenses issued numbered 599, deeds recorded numbered 9, and collections from fines, fees, licenses, etc., totaled \$4,497.92.

## MARSHAL

During the year 641 writs were served by the office of the Canal Zone marshal. Fees collected amounted to \$243.45; fees paid to witnesses, jurors, interpreters, etc., amounted to \$61; and trust funds handled during the year aggregated \$64,645.66.

## MAGISTRATES' COURTS

In the magistrate's court at Balboa, 7 cases were pending at the beginning of the year, 1,507 cases were docketed, and a like number disposed of, leaving 7 cases pending at the close of the year. Of the criminal cases settled, 1,149 resulted in conviction, 50 in acquittal, 173 were dismissed, and 68 held to the district court. During the year petitions were made to the district judge for the commitment to Corozal Hospital of 71 persons for observation.

In the magistrate's court at Cristobal, 6 cases were pending at the beginning of the fiscal year, 1,191 cases were docketed, 1,187 cases were disposed of, leaving 10 cases pending at the close of the year. Of the criminal cases settled, 954 resulted in convictions, 32 in acquittals, 88 were dismissed and 76 held to the district court.

Fines and other collections totaled \$11,211.75 at Balboa and \$9,342 at Cristobal.



## FIRE PROTECTION

During the year 107 fires, 5 emergency calls, and 3 false alarms were reported. Of the fires, 72 occurred in property of The Panama Canal, 12 in Panama Railroad property, 9 in United States Army property, 2 in property of the United States Navy, and 12 in private property.

The total loss from all fires amounted to \$15,919.03 during the year, distributed as follows: Panama Canal, \$1,292.78; Panama Railroad Co., \$767; United States Army, \$5,070; United States Navy, \$2; private property, \$8,787.25. The total value of the property involved was \$4,356,849.98.

Periodical inspections of all Government buildings, docks, yards, etc., were conducted, and fire extinguishers and other equipment were maintained in good condition throughout the year. Thirty-five extinguishers and 2,000 feet of hose, the latter mostly for replacement, were added to the equipment.

In addition to the paid firemen, who numbered 43 at the close of the year, an average of 18.7 volunteer fire companies was maintained at the several villages, the personnel of which numbered 187 on June 30.

## PUBLIC-SCHOOL SYSTEM

The school organization in the Canal Zone is comparable with a city school system in the United States, with a superintendent and his assistants in charge and a principal at each school; the towns of the Canal Zone, although more scattered, being comparable with the sections of a city where schools are located. All elementary schools are graded and the high schools, which are at Balboa and Cristobal, offer the usual courses. Pupil transfers to and from the States are frequent, and graduates of the high schools may enter various institutions of higher learning in the States. Consideration is being given to the establishment of two-year junior college courses, in extension of the courses offered in the Balboa high school.

*White schools.*—It has been the policy to provide for American children educational facilities of the same character as can be found in the best public schools in the United States. Only American teachers, with normal school or college training, are employed. At the close of the year 87 teachers were employed in the white schools. During the year there were 10 replacements, 7 of teachers who married, 3 of those who resigned for other causes.

During the past fiscal year the average daily attendance was 2,429.9 as compared with 2,051.5 for the preceding year. Six elementary and two high schools were maintained. At the close of the school year 71 pupils graduated from the two high schools as compared with 53 for the previous year. Dr. R. G. Reynolds, provost of

Teachers College, Columbia University, visited the Isthmus at the close of the school year and delivered the address at the commencement exercises.

Plans were perfected during the year for a reorganization of the seventh and eighth grades in the Balboa and Cristobal schools along the lines of the junior-high-school plan of organization used by some of the leading schools in the United States. Specimens of records and reports also were secured from a number of representative schools and after careful study of these forms a system of records and reports was devised to embody the features deemed desirable for the Canal Zone schools.

*Colored schools.*—The average daily attendance for the year was 2,016.9 as compared with an average of 1,976.5 for the preceding year. A much larger growth would have been indicated if facilities had been available for all the pupils who sought admission. This situation will be alleviated somewhat at the beginning of the new fiscal year when appropriations will become available permitting the employment of 13 additional teachers and admitting some 650 pupils from the waiting list. The construction of eight new classrooms at Silver City, Cristobal, and six additional rooms at Gatun was under way at the close of the fiscal year.

Manual training was introduced in the school at La Boca during the past year, and will be begun in the schools at Silver City and Gatun in the fiscal year 1927-28.

Operation of the colored schools on a 12-month basis was approved to begin with the fiscal year 1927-28, which will tend to relieve the congestion and advance the standard of work in these schools.

A corps of 47 teachers was maintained throughout the year. In the colored schools the curriculum does not extend beyond the grammar-school grades, and only West Indian teachers are employed.

#### POSTAL SYSTEM

Twelve post offices were in operation at the end of the year, all of which, except Gamboa, were authorized to transact money-order business. No new post offices were opened during the year. The post office at Fort Sherman was closed on May 31 and postal service for that post is now furnished by the post office at Cristobal.

The total receipts of the postal service were \$181,589.04, as compared with \$178,324.02 for the year preceding. The total disbursements were \$181,812.29, leaving a deficit of \$223.25 for the year. This showing of practically a self-sustaining basis is in the face of the fact that it is estimated that 60 per cent of all mail handled locally is dispatched under official frank from which the bureau of posts derives no revenue but for which it must bear the burden of transportation and other handling charges.

The sale of United States postage stamps and postal cards surcharged "Canal Zone" was continued throughout the year, but stamped envelopes are manufactured by the Panama Canal press. It is proposed to discontinue the use of such surcharged postage stamps as soon as funds are available for obtaining the required dies for the printing of a distinctive series of Canal Zone postage stamps and other stamped paper. As the additional revenues which would be derived from the sale of an entirely new issue of stamps would, in all probability, nearly defray the expense involved, it is hoped that funds for this purpose may be made available at an early date.

Deposit money orders issued without the payment of fee, in lieu of postal savings certificates, had a total value of \$713,685. The total amount of June 30, 1927, including deposit money orders, old postal savings accounts, and unpaid fee-paid money orders in favor of the remitter, was \$471,743.10, as compared with \$466,996.65 on June 30, 1926. The system operates satisfactorily and at a minimum expense. Interest is paid on such deposit money orders at the rate of 3 per cent per annum. Since the inauguration of the system on August 21, 1916, the interest received from the banks in excess of that paid to depositors aggregate, \$158,638.98.

During the year the decision was reached to discontinue the C. O. D. system between the United States and the Canal Zone, effective July 1, 1927. This system, which was established in 1914, has been abused by cheap mail-order concerns. It was estimated that the cost to the Canal Zone postal service of operating the system during the last year was about \$6,000, which was disproportionate to the benefits derived from it by local patrons.

There were 147,979 money orders issued during the year, amounting to \$2,754,567.03, on which fees amounting to \$13,399.63 were collected. During the year 40,486 money orders, amounting to \$1,175,-445.25, were paid.

In the registry division of the post offices 278,315 letters and parcels were handled, of which 44,288 were official mail under frank and accepted for registration without fee.

During the fiscal year a total of 2,793 dispatches of mail were made to different foreign exchange post offices by the post office at Cristobal and 1,668 dispatches by the post office at Balboa. Incoming dispatches from foreign post offices numbered 3,018 at Cristobal and 1,075 at Balboa.

The routing of mail to and from the United States via Key West continued to show gratifying results and advances the mail considerably when close connection is made at Havana.

United States and foreign transit mail destined to the west coast of Central and South America, as well as mail exchanged between Cuba, Jamaica, and other insular governments with Colombia, Costa Rica, Venezuela, etc., continued to be handled under the supervision of the director of posts. Mail from European countries routed via the Isthmus for transshipment is handled by the director of posts in behalf of the United States Post Office Department, whereas direct agreements are in effect between the director of posts and the postal administrations of Peru, Costa Rica, Australia, and New Zealand for the handling of their mails routed via the Isthmus. Eventually, it is believed that the postal administrations of all Central and South American countries will find it more satisfactory and more economical to discontinue their local postal agencies and have their mails handled through the Canal Zone postal service.

#### CUSTOMS

Vessels entering and clearing Canal Zone terminal ports numbered 12,497 and 12,506, respectively, an increase of about 7 per cent as compared with the previous fiscal year.

All merchandise discharged at Cristobal and Balboa, destined to local consignees not connected with The Panama Canal, the Panama Railroad, or the United States Army or Navy, remains in the custody of the Canal Zone customs until submission of the necessary papers from Panaman officials showing that duty has been paid. Permits for 9,318 releases were authorized during the year. Free-entry requests numbering 3,708 were approved for employees of The Panama Canal, the Panama Railroad Co., and members of the United States Army and Navy who have the privilege of importing articles for their personal use without payment of duty.

Customs duty was paid to the Republic of Panama to the amount of \$109,728.74 on 35,402 mail parcels for nonemployees and on dutiable articles for employees imported through the Canal Zone post offices.

No arrests were made for violations of the customs regulations, but numerous attempts to smuggle merchandise of various classes, in small quantities, were frustrated, and such merchandise was confiscated and delivered to the proper authorities of the Republic of Panama.

Three arrests were made by police and customs officers during the year for alleged violations of the narcotic drug act. Convictions were secured in each case and the offenders sentenced to hard labor in the Canal Zone penitentiary.

To facilitate the discharge of passengers from vessels arriving after the usual working hours, special customs service was furnished to 678 vessels, of which 483 were at Cristobal and 195 at Balboa. Fees totaling \$5,535 were collected for this extra service.



## SHIPPING COMMISSIONER—SEAMEN

The shipping commissioner and his deputies have the same powers with respect to American seamen as shipping commissioners in the United States and American consuls in foreign ports. During the fiscal year 3,518 seamen shipped on American vessels and 3,251 were discharged at Canal Zone ports. There were 154 American seamen lodged and subsisted at the expense of the United States Government. Sick or destitute seamen returned to the United States at the expense of the appropriation for the relief of destitute American seamen numbered 183, and 129 were signed on vessels as seamen or workaways and returned to the United States without expense to the government.

The wages earned by seamen discharged at Canal Zone ports aggregated \$87,557.82; the total approved for deduction on account of advances, allotments, fines, slop-chest account, etc., was \$19,622.53, and the balance of \$67,935.29 was either paid to seamen under the supervision of the deputy shipping commissioners or received on deposit for their account. The wages and effects of 11 American seamen who died in Canal Zone hospitals, or who died at sea and were brought to the Canal Zone for interment, were handled by the shipping commissioner during the year.

## PROHIBITED ALIENS

Chinese passengers arriving at Canal Zone ports during the fiscal year numbered 737, in addition to 42 on hand July 1, 1926, making a total of 779 in transit to the Republic of Panama and other countries. Of this number, 542 were admitted to the Republic of Panama by authority of that Government, and the others, with the exception of four awaiting transportation at the end of the year, either proceeded on their journey or were returned to the port of embarkation.

Chinese crews were checked on arrival and again upon the vessel's departure, in order to see that no illegal landings were made, and crews of 602 vessels were so checked during the year.

## ADMINISTRATION OF ESTATES

During the year the estates of 82 deceased or insane employees of The Panama Canal and the Panama Railroad Co. were settled and there were 29 estates in course of administration on June 30, 1927. The cash assets involved in the settlement of the 82 estates were \$16,898.59.

## LICENSES AND TAXES

Licenses issued for motor vehicles, bicycles, and animal-drawn vehicles, and permits for the peddling of foodstuffs, the vending of merchandise, etc., numbered 7,508 for the year. License fees, taxes, etc., aggregated \$34,731.79 for the year. Automobiles accounted for 4,978 of the licenses and \$30,030.79 of the fees.

## IMMIGRATION VISAS

During the year ended June 30, 1927, a total of 100 visas were issued to alien residents of the Canal Zone going to the United States. Of these, 43 were quota, 33 nonquota, 18 nonimmigrant, and 6 were transit-certificate visas. Two applications for visas were refused on account of the applicants being diseased. The fees collected for the visas amounted to \$906.

## RELATIONS WITH PANAMA

There was direct correspondence between the government of the Canal Zone and the Republic of Panama on the issuance of complementary transportation over the Panama Railroad, traffic regulations, street cleaning, garbage collection, and on various other questions principally of local interest.

The negotiations for a general revision of the existing agreements between the United States and the Republic of Panama, which have been pending for several years, were continued but had not been concluded at the end of the fiscal year.

## SECTION IV

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### ADMINISTRATION

#### CHANGES IN ORGANIZATION AND PERSONNEL

The section of meteorology and hydrography was merged with the section of surveys, effective November 1, 1926. These two sections were performing allied work and it was found that they could be advantageously combined. The new section comes under the assistant engineer of maintenance, as did both of the old sections. This brings all work relating to seismology, hydrography, meteorology, and surveying under one administrative unit.

Capt. William McEntee, United States Navy, was appointed superintendent of the mechanical division June 13, 1927, vice Capt. Ross P. Schlabach, United States Navy, who had occupied the position since June 13, 1924.

Col. George M. Ekwurzel, Medical Corps, United States Army, was appointed superintendent of Ancon Hospital May 15, 1927, vice Col. Will L. Pyles, Medical Corps, United States Army, who had occupied the position since May 28, 1923.

E. E. Weise was appointed assistant to the chief of the Washington office, The Panama Canal, effective May 1, 1927, vice Ray L. Smith, whose death occurred April 20, 1927. Mr. Smith's service with The Panama Canal dated from December 15, 1904, and his loss is felt keenly.

#### FORCE EMPLOYED

The force employed by The Panama Canal and the Panama Railroad Co. on the Isthmus increased from 12,819 in June, 1926, to 13,403 in June, 1927, or 4.55 per cent. The distribution of the personnel on the third Wednesday in June of both years is shown in the following tabulation, from which it may be seen that the increase is considerably greater in the silver or alien employees than in the gold or American employees, the percentages of increase being 5.3 and 2, respectively. The Americans comprise the supervisory, technical, higher clerical, and highly skilled mechanical force.

	As of June 16, 1926			As of June 15, 1927		
	Gold	Silver	Total	Gold	Silver	Total
Operation and maintenance:						
Office.....	37	35	72	37	40	77
Electrical.....	148	153	301	142	180	322
Municipal engineering.....	79	580	659	78	803	881
Lock operation.....	210	624	834	211	606	817
Dredging.....	174	879	1,053	182	898	1,080
Mechanical.....	408	738	1,146	442	792	1,236
Marine.....	185	535	720	196	596	792
Fortifications.....	14	118	132	14	35	49
Supply department:						
Quartermaster.....	181	1,519	1,700	187	1,716	1,903
Subsistence.....	8	100	108	7	97	104
Commissary.....	198	977	1,175	203	1,056	1,259
Cattle industry.....	7	326	333	7	127	134
Hotel Washington.....	8	88	96	8	95	103
Transportation.....	49	200	249	46	208	254
Accounting department.....	198	8	206	200	8	208
Health department.....	227	801	1,028	240	784	1,024
Executive department.....	502	285	787	490	279	769
Panama Railroad:						
Superintendent.....	47	217	264	48	234	282
Transportation.....	65	112	177	64	113	177
Receiving and forwarding agent.....	85	1,419	1,504	86	1,588	1,674
Coaling stations.....	49	226	275	48	210	258
Total.....	2,879	9,940	12,819	2,936	10,467	13,403

The larger number of employees on the rolls of some of the divisions at the end of the fiscal year as compared with June, 1926, was due to increased construction work in some divisions and to increased business in others. Explanations of the larger increases are given below:

*Electrical division.*—Increase in work due to new construction; this is temporary.

*Municipal engineering.*—Increase due to new construction, and is temporary.

*Dredging division.*—Increase due to construction of the Rio Grande spillway and to operating the Gamboa gravel plant on a two-shift basis to meet increased demand for gravel due to new construction.

*Mechanical division.*—Increase due to construction of two tugs for The Panama Canal and a number of barges for Buenaventura, Colombia.

*Marine division.*—Increase due to increased traffic through the canal necessitating more pilots and more seamen to handle lines on ships transiting the canal.

*Quartermaster.*—Increase is largely in the constructing quartermaster's division and is due to increased construction work.

*Commissary division.*—Increase is due to increased business and to improvements at La Boca and Balboa commissaries.

*Panama Railroad, superintendent.*—Increase due to increased help necessary in laying new steel from Mount Hope to Colon.

*Receiving and forwarding agent.*—Greater number of vessels and larger volume of cargo handled as compared with preceding years.



## WAGE ADJUSTMENTS

*Gold employees.*—The policy of compensating American employees at 25 per cent above rates paid by the Government for similar employment in the continental United States, as authorized by the Panama Canal act, was continued in so far as appropriations would permit. As in past years, owing to insufficient appropriations, a number of employees in various divisions of the civil government had to be denied the full 25 per cent over rates paid employees engaged in corresponding work in the United States.

Reflecting the stability of wages in the United States throughout the year, revisions in basic salaries and wages on the Isthmus were slight, and such changes in compensation as were authorized consisted largely of individual rather than group adjustments.

The wage board, composed of the assistant engineer of maintenance and a representative selected by the organized employees, held 22 meetings during the year. The salary board, composed of the heads of the nine major departments and divisions of The Panama Canal and Panama Railroad, held meetings in December and June.

The respective spheres of the two boards have not been definitely established as yet, though in a general sense salary and wage schedule derived by the application of the 25 per cent differential over rates authorized for similar work in the United States are referred to the wage board, and adjustments not so determined and in which local coordination must be given special consideration are referred to the salary board. Both boards function merely in an advisory capacity to the Governor, who is charged with the fixing of all rates of pay. In some classes of employment the wage board submits recommendations as to the general scale of rates to be established, while the salary board, which functions primarily as a coordinating agency, recommends rates for individual positions in accordance with the general scale for the class of employment in which the individual employee under consideration is engaged.

*Alien employees on the silver roll.*—There were no changes in the basic wage schedules previously authorized for alien employees other than a few adjustments involving small groups. The basic rate for unskilled labor remained at 20 cents an hour, and the maximum authorized rate for alien employees at 40 cents an hour, or \$80 per month. The average rates in effect as of November 1, 1926, when the last general survey was made, as compared with the three preceding years, were as follows:

	Average earnings	
	Monthly employees	Hourly employees
	<i>Per month</i>	<i>Per hour</i>
Nov. 1, 1923.....	\$55.27	\$0.2312
Nov. 1, 1924.....	54.74	.2323
Nov. 1, 1925.....	55.28	.2385
Nov. 1, 1926.....	55.40	.2395

As may be seen by the above, during the past four years average earnings of the alien employees have remained almost stationary. During this same period the index of living costs, taking prices of staple commodities as sold in the canal commissaries as a base, shows a decline from 146.69 as of October 1, 1923, to 143.34 as of January 1, 1927; and a further sharp reduction to 136.95 as of July 1, 1927, which latter, however, may be partly seasonal.

At the close of the fiscal year, therefore, the worker's real wage, measured in the amount of goods purchasable, was more favorable than it had been at any time for some years. A second factor, however, which needs be given consideration so long as wages are fixed with relation to commodity prices, is that the number of dependents per worker has been increasing steadily from year to year. During construction days when laborers were imported in great numbers, the proportion of male workers domiciled in the Canal Zone was approximately 60 per cent of the total alien population. This ratio has been declining from year to year until at present it is 35 per cent. In view of the large increase in the number of women and children, after the termination of construction work and the setting aside of permanent town sites to accommodate alien employees and their families, it is obvious that, though wages as compared with commissary prices are slightly more favorable than in the past, this has been offset by the greater number of dependents who must be housed, clothed, and fed from the average employee's earnings.

There have been repeated efforts on the part of alien employees during the past few years toward securing the removal of the present \$80 limitation on their rates of pay. Considerable study has been given to the question of these rates, and further consideration may indicate that some increases should be granted. The canal administration has long recognized its obligation to maintain a schedule of rates that will permit its alien employees to live in reasonable decency and comfort, and has at all times endeavored to maintain a scale of wages that would provide a standard of living as high or higher than that which prevailed among these employees during construction days, and equal if not superior to standards for this class of employment in adjacent Latin-American countries and the islands of the West Indies.

#### COMPLAINTS BOARD

All employees, whether members of a labor organization or not, have a right to submit proper complaints concerning working conditions to the Governor, requesting investigation by the complaints board. The scope of cases referred to the board includes discharges for cause; seniority, where it is or may become a factor in making discharges on account of reduction of force; ratings given to em-

ployees for workmanship and conduct; or other complaints of unfair or discriminative treatment concerning which the Governor desires an investigation by competent and representative persons, for the benefit of their recommendations.

This board relieves the Governor of much of the routine work connected with the handling of complaints, but does not deprive any employee of the right of appeal to the Governor. It is composed of the assistant engineer of maintenance, the head of the department or division in which the complaint originated, and two representatives of the employees, nominated by the central body of the employees' associations and approved by the Governor. The work of the board is a valuable auxiliary in promoting a sense of fairness and contentment among the working force, since the employee is assured of a hearing of any real or fancied complaint by a board on which his fellow workers have equal representation and on which the canal administration is represented by a disinterested official. The functions of the board are wholly advisory and its findings are not effective until approved by the Governor.

As indicative of the generally satisfactory conditions of employment that existed throughout the year, it may be stated that but three complaints were handled by the board during the fiscal year.

#### RECRUITING AND TURNOVER OF FORCE

*Gold employees.*—The number of persons tendered employment through the Washington office of The Panama Canal during the year was 495, of whom 261 accepted and were appointed; the percentage of acceptances and appointments was 52.7. In the previous year the tenders numbered 401, appointments 167, giving a percentage of acceptances of 41.6, and in the fiscal year 1925 the corresponding figures were 512 and 234, percentage 45.7. Including the 261 employed in the United States in the past year and 318 employments on the Isthmus, the total additions to the gold roll were 579. Separations numbered 506, of which 14 were due to retirement. Based on a force of 2,879 gold employees at the beginning of the year, this gives a turnover rate of 17.6 per cent per year from all causes, as compared with 17.5 per cent in the previous year.

When the services of an employee are no longer required in one department efforts are made to place him in a vacancy in another department in preference to bringing a new employee from the States. This policy has proved profitable to the canal in that not only are the effort and expense incurred in recruiting and testing new and unknown employees eliminated but also the experience and knowledge gained by the employee in one department are often of value to him in his new work. The canal also retains the services

of a worker accustomed to tropical living conditions. Of the 318 additions to the gold roll on the Isthmus during the past year 130 were reemployments.

Two thousand seven hundred and ten persons (2,473 from New York, 135 from New Orleans, and 102 from Pacific coast ports), including new appointees, those returning from leave of absence, and members of employees' families, were provided transportation from the United States to the Isthmus. In response to inquiries and applications for employment and in the issuance of appointments and in gathering wage data, the Washington office sent out 9,010 letters, 1,209 telegrams, and 12,711 circulars.

*Silver employees.*—No figures are available concerning the number of separations and employments among the alien personnel comprising the silver roll, but no difficulty was experienced in maintaining an adequate force, and the percentage of turnover was fairly low for this class of labor.

#### PUBLIC AMUSEMENTS AND RECREATION

Ten clubhouses were operated continuously throughout the year, of which five were for white and five for colored employees of the canal. These clubhouses were open daily from 7 a. m. to 11 p. m., and provided central meeting places in each of the larger settlements, where employees and their families could find wholesome entertainment and recreation.

Reading rooms are maintained where current numbers of the leading United States newspapers, magazines, and periodicals are available. Branch libraries containing suitable selections of books are open for one or more hours in the evening. Moving pictures are exhibited daily in the larger clubhouses, and several times weekly at the smaller clubhouses; weekly programs are shown at the leper colony, the insane asylum, and the penitentiary, where film service is furnished without charge. Plays, concerts, vaudeville, and other entertainment by local talent or by professional entertainers passing across the Isthmus on their way to and from other countries are given as opportunity offers. Bowling, billiards, pool, chess, and checkers provided recreation for large numbers of people, and card parties were popular at all clubhouses.

Ice cream, soft drinks, and light lunches may be obtained at all clubhouses, and tobacco, candy, toilet articles, magazines, souvenirs, etc., are on sale at all clubhouses where the demand warrants it.

At the playgrounds, games and kindergarten work were provided for children from 3 to 6 years old. The playgrounds were also used by the school children outside of school hours and during the summer vacation, and baseball, soccer ball, basket ball, volley ball, and



indoor-baseball leagues were organized. Regular gymnasium classes were held for high-school students as well as mixed classes for adults during the evening. The swimming pools at Balboa and Pedro Miguel were used freely during the year, and swimming, diving, life saving, and physical development exercises were taught, and swimming meets for school children and adults were arranged from time to time.

At the colored club houses, literary clubs, talks on education, health, and other subjects helpful to children as well as adults form an important part in the community welfare work. Industrial schools meet one or more nights weekly, where shorthand, type-writing, and grade subjects are taught; and classes are conducted in cooking, baking, and sewing for girls.

Most of the present clubhouses are old, and extensive repairs are necessary to keep them in good condition. The twentieth anniversary of the use of one of the buildings, that at Pedro Miguel, was celebrated on June 7; the clubhouse was opened originally on June 7, 1907, in Gorgona, and on the abandonment of Gorgona had been transferred to Pedro Miguel. New clubhouses are needed at Balboa and Ancon, and inexpensive playsheds and facilities for swimming should be provided at some of the colored settlements where none exist at present.

Some of the clubhouse activities are carried on at a profit; others are not self-sustaining and the deficit must be met from appropriations. The justification for such appropriation is that the playground activities, swimming pools, tennis courts, etc., are such as are provided at public expense by many cities in the United States and that these activities add materially to the morale of the organization and to the physical and moral health of the community.

Clubhouse finances for the fiscal year are taken up in the section on business activities.

#### PURCHASES AND SALES IN THE UNITED STATES

The principal purchases of supplies were made by the Washington office of The Panama Canal as in previous years. Branch offices in charge of assistant purchasing agents were continued at New York, New Orleans, and San Francisco, and the personnel at these offices acted also as receiving and forwarding agents for materials forwarded to the Isthmus from their respective ports.

The principal medical and hospital supplies were purchased through the medical section, New York general intermediate depot, United States Army, Brooklyn, as in the past.

The number of orders placed for supplies during the fiscal year was 7,693 as compared with 6,674 for the preceding fiscal year, and exceeds the number during any fiscal year since 1904, except 1915,

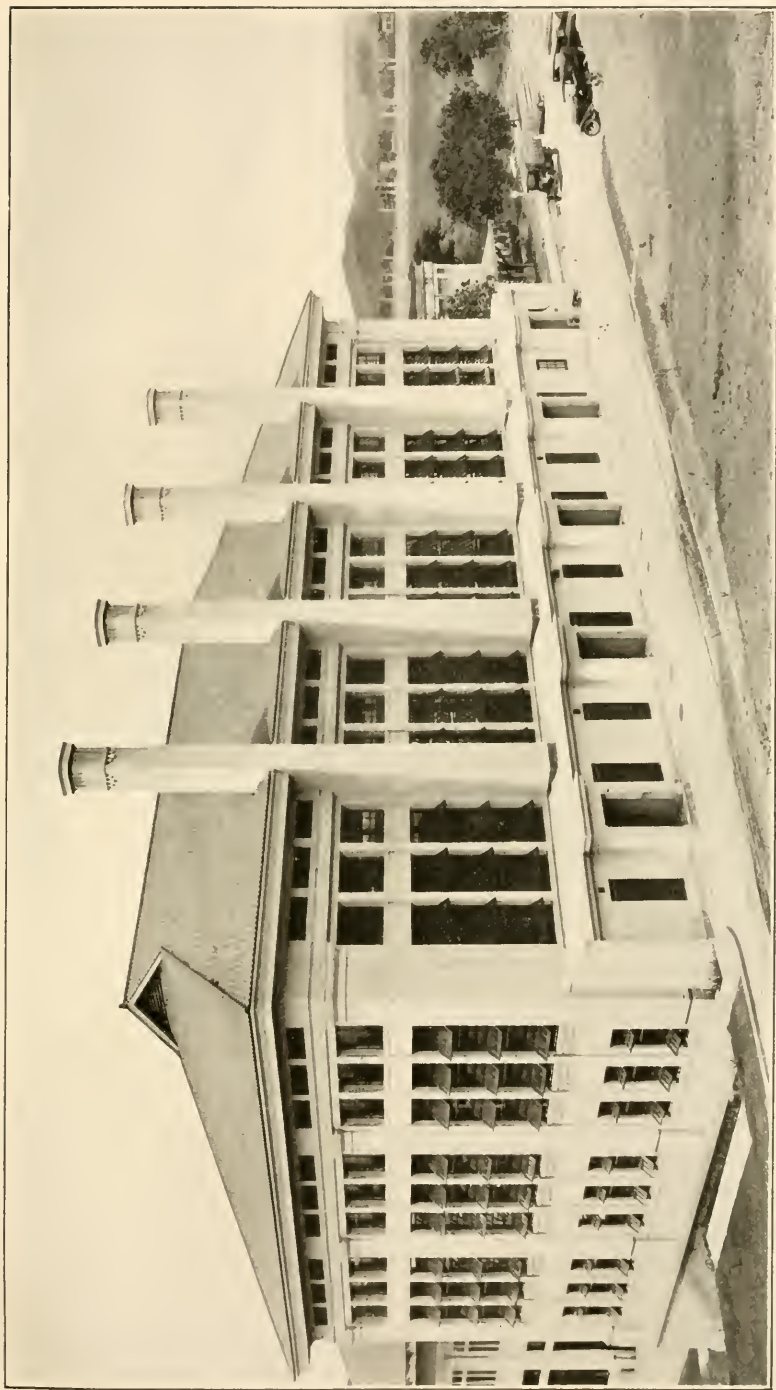
• 1916, 1917, and 1920. The force handling this work was not increased and considerable overtime was required. The total value of orders placed during the past year was \$5,676,669.58 as compared with \$4,236,313.10 for the fiscal year 1926. The grand total for the purchase of supplies and materials by orders placed in the United States by and under the direction of the Washington office since 1904 is \$194,267,862.35. Fifty-four contracts were prepared during the fiscal year 1927, amounting to \$3,020,357.07; among the more important were the following: For Diesel engines and accessories for two electric tugs, amounting to \$163,013.36; for electrical machinery and auxiliary equipment for two electric tugs, amounting to \$109,150; for Diesel electric hydraulic dredge and equipment, amounting to \$1,042,600.

The sale of surplus canal material by the purchasing department in Washington during the fiscal year amounted to \$60,031.52, as compared with \$76,357.94 during the preceding fiscal year.

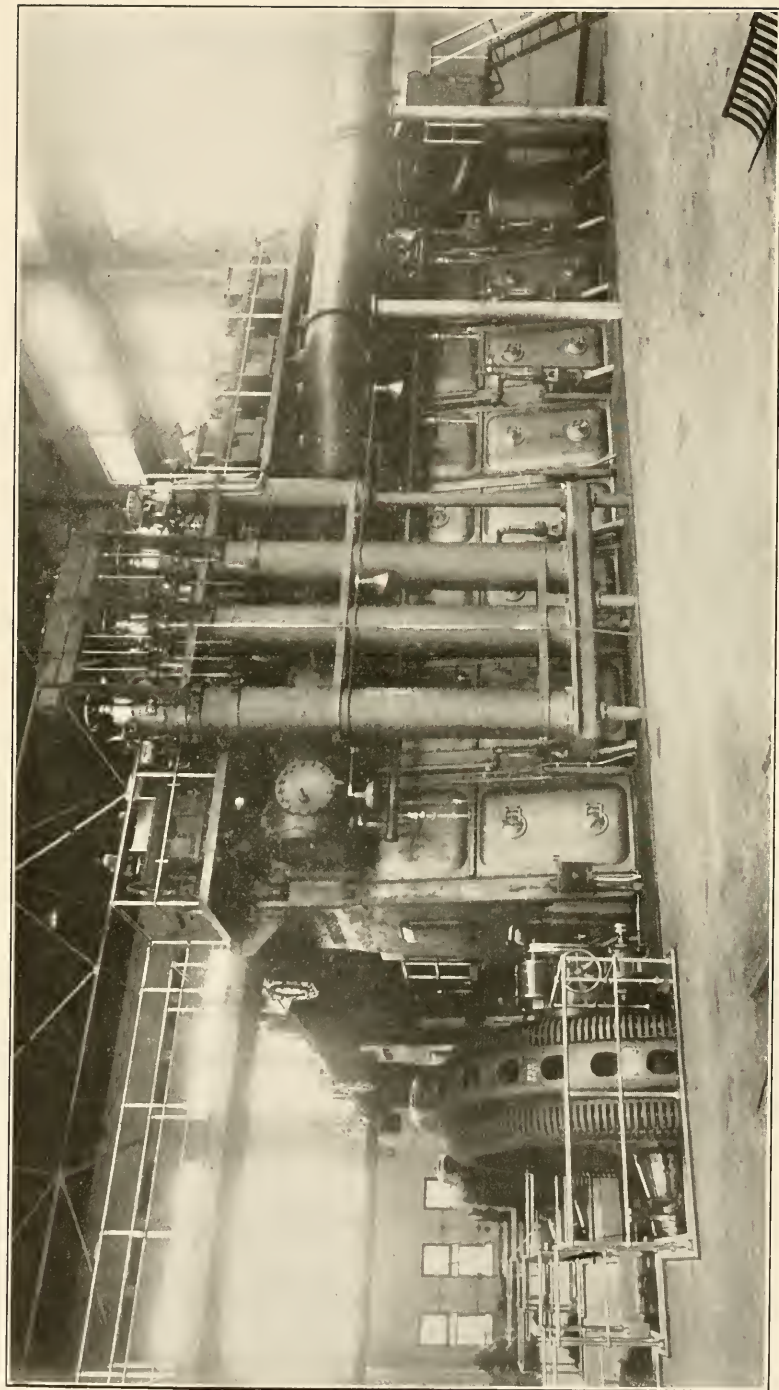
In representing The Panama Canal in the United States, the Washington office handled extensive correspondence and maintained representation on various Government boards and coordinating committees, in addition to contacts with other governmental departments with reference to canal affairs.

#### TACNA-ARICA PLEBISCITE

Activities on this plebiscite having been in abeyance during the year, except for the work of the boundary commission, there was no important participation in its work by employees of the canal on leave, as in the previous year. One of the two employees absent at the beginning of the year on work of the boundary commission returned to canal duty, leaving one still on detached service at the end of the year.

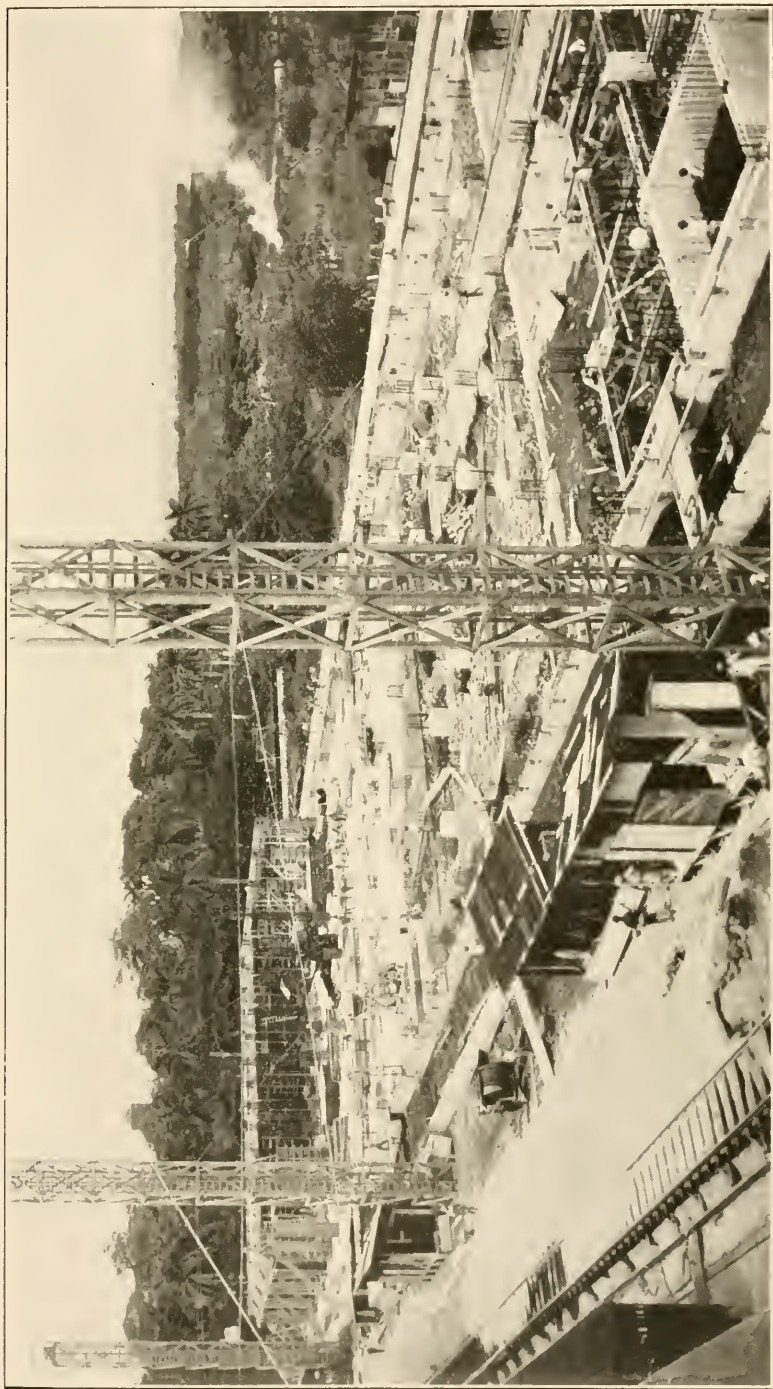


EXTERIOR OF NEW DIESEL-ELECTRIC PLANT AT MIRAFLORES



DIRECT-CONNECTED DIESEL-ELECTRIC GENERATORS IN NEW PLANT, MIRAFLORES

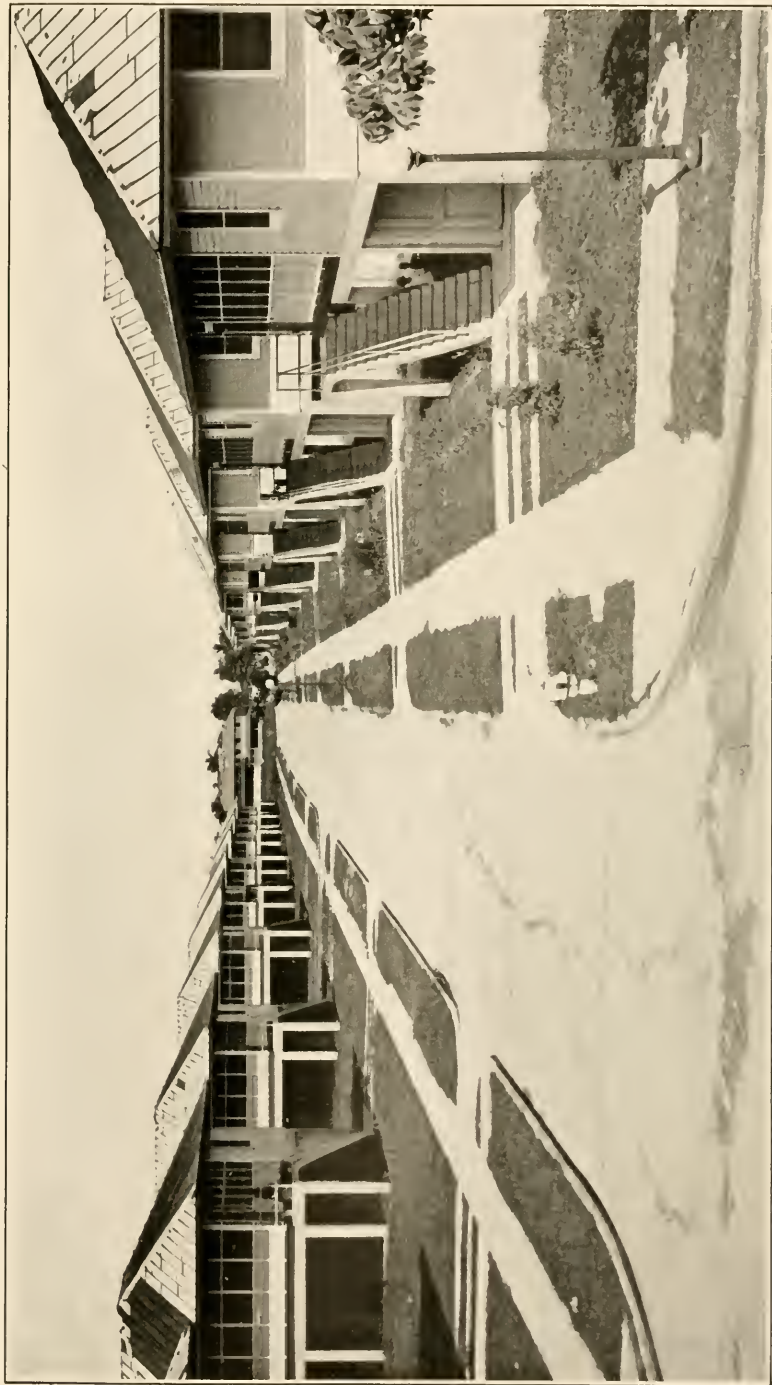




CONSTRUCTION OF MANUFACTURING PLANTS AND STOREHOUSE FOR COMMISSARY DIVISION AT MOUNT HOPE



PEDRO MIGUEL LOCK. CARGO CARRIER ON LEFT BEING RAISED TO LEVEL OF GAILLARD CUT; PASSENGER LINER ON RIGHT BEING LOWERED TO LEVEL OF MIRAFLORES LAKE.



NEW CRISTOBAL. TYPE 1 COTTAGES, OF WHICH 48 ARE BEING CONSTRUCTED





## SECTION V

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### FINANCIAL AND STATISTICAL STATEMENTS

Various financial statements with reference to The Panama Canal and three tables relative to the traffic through the canal are presented on the following pages. The financial statements are abstracted from the annual report of the accounting department and the traffic tables were compiled by the bureau of statistics.

The following is a list of all of the tables contained in the annual report of the accounting department and of the three traffic tables. Tables Nos. 23, 35, 40, 41, and Nos. 45 to 66, inclusive, in the accounting department report are not published because they are concerned with details of operation which have no general interest. For purposes of reference, however, the numbers given these tables are preserved below and all of them are listed. Following this list is a series of notes of explanation of the financial tables. These notes explain both the published and unpublished tables. Following the notes are the tables, with the exception of those the omission of which is noted above.

The complete list of tables is as follows:

- |              |   |
|--------------|---|
| Table<br>No. |   |
| 1.           | General balance sheet.  |
| 2.           | Summary of revenues and expenses.                                       |
| 3.           | Balances in appropriation and fund accounting.                          |
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#### EXPLANATION OF FINANCIAL AND STATISTICAL STATEMENTS

A brief explanation of tables numbered 1 to 69, inclusive, follows:

*Table No. 1—General balance sheet.*—A few changes have been made in this statement. The trial balance shown last year has been omitted. This trial balance showed the canal expenses, business expenses, and canal earnings for the year on the asset side, and the canal revenues and business revenues separately on the liability side. These same figures are shown in Tables 24, 25, and 26. The theoretical interest account has been closed and the accumulated interest added to the account United States Treasury, as the interest on amortization and depreciation of canal fixed property is theoretically accruing in the Treasury. The commercial capital investment was reduced by \$400,000, covering the book value of the steamship *Panama*, which was sold and the net proceeds covered into the Treasury as miscellaneous receipts. Further reference is made to the sale of this vessel under Table No. 25. The \$400,000 was transferred to national defense capital as has been done in similar cases before.

The former depreciation account has been divided into two accounts—depreciation (unfunded), and replacement reserves (funded). The depreciation account now only contains the accumulated depreciation on canal fixed property, for which no funds are provided for replacement. The reserve for replacement includes accrued depreciation for which funds are actually available for making replacements of canal transit equipment and business property and equipment. These accounts are further explained under the heading of Tables Nos. 24 and 29.

A new account was opened under the heading of "Contingent reserve," or "Reserves for contingencies," to which were transferred the unpaid salaries and wages from the beginning of the operation of The Panama Canal to June 30, 1925, unclaimed as of December 31, 1926, and the unpayable vouchers registered prior to July 1, 1925, unpaid as of December 31, 1926, and the account was debited with the amount of uncollectible accounts receivable. The amounts written off were as follows:

Unclaimed salaries and wages.....	\$47, 553. 87
Unclaimed accounts payable.....	12, 679. 25
Total.....	60, 233. 12
Uncollectible accounts receivable.....	9, 337. 49
Net amount.....	50, 895. 63

The accounts receivable are of two kinds, viz, hospital bills against silver employees, collectible by pay roll deduction, incurred between July 1, 1921, and June 30, 1925, uncollected as of December 31, 1926, \$7,867.99; and general accounts receivable registered prior to July 1, 1925, uncollected as of December 31, 1926, \$1,469.50. During the periods in which the foregoing dormant accounts have accumulated, the pay rolls have amounted to approximately \$130,000,000, and accounts payable to \$60,000,000 and the accounts receivable to \$280,000,000. In writing these amounts to the contingent account, none of the items have been canceled. Efforts are still made to collect, and when claims are received for salaries and wages or vouchers, they are paid from this contingent fund. The difference between the above net amount and the amount shown in the table, \$11.47, represents the net result of such collections and payments subsequent to February, 1927, when the account was established. The balance in this account is also separated by appropriations from or to which the various items are payable.

The net surplus from operations, which has previously been carried in two accounts under the headings of "Canal surplus" and "Business surplus," has been combined in one account, the total amount to June 30, 1927, being \$79,953,875.53 as detailed in Table No. 27.

*Table No. 2—Summary of revenues and expenses.*—This is a new table showing comparatively for the fiscal years 1926 and 1927, the net results of operation of both transit and business units. The canal transit surplus for 1927 amounts to \$15,611,093.80, which is \$8,301,845.52 in excess of 3 per cent on the investment. In other words, the net revenues for the fiscal year represents approximately 6½ per cent on the investment. The net revenue from business operations amounts to \$876,536.80, which is \$132,040.06 in excess of the 3 per cent on the investment, the net revenue being approximately 3½ per cent on the investment in business facilities. The combined operations show a net revenue or surplus of \$16,487,630.60, which is a little in excess of 6 per cent on the total commercial investment in The Panama Canal.

*Table No. 3—Appropriation and fund accounting.*—This table shows the balance of appropriated and available funds in the United States Treasury and in the hands of the Panama Canal fiscal officers as of June 30, 1927. The fiscal officers (i. e., the disbursing clerk in Washington, and the paymaster and collector on the Isthmus) had cash on hand amounting to \$1,983,725.21, as compared with \$2,890,455.56 at the end of the previous fiscal year. The paymaster's cash balance was \$968,406.01, compared with \$2,107,988.49 the previous year, a reduction of \$1,139,582.48. Taking the miscellaneous receipts and trust funds out leaves a working cash balance in the hands of the fiscal officers of \$1,306,599.66.



The balance available for expenditure, after providing for direct liabilities, obligations, and reserves, is \$1,422,678.28, the greater part of which is allotted and obligated for expenditure during the fiscal year 1928 on projects not completed at the end of the fiscal year. This balance includes an item of approximately \$200,000 representing the difference between the amount appropriated and the amount actually spent on the new Miraflores Diesel electric plant. This saving will be carried forward in the estimates for deduction from the appropriation requirements. A part of the foregoing available balance is the unexpended balance of the \$1,100,000 which was borrowed from the electric light and power system's reserve for replacement, which is to be restored to that reserve when the exact amount is determined.

The amount shown under the heading of work in process and suspense represents the expenditures which have been made but which have not been charged off or set up in the capital account on the books. The credit items under this heading payable from sanitation and civil government funds, represent reserves for items obligated for the fiscal year 1928. The \$5,581,368.18 under the heading of general ledger reserves is made up of the reserves for replacement, extraordinary repairs, gratuity, and contingencies shown in the general balance sheet, Table No. 1. This is the balance in reserve after withdrawing \$1,100,000 from the electric light and power plant reserve for replacement, which amount is added to the amount appropriated by Congress to meet the operation and maintenance requirements for 1927.

From the balance available June 30, 1927, the sum of \$820,669.15, representing the profits on business operations during the fiscal year 1927, is immediately transferable to miscellaneous receipts.

*Table No. 4—Appropriations by Congress.*—There has been no change in the appropriations for canal construction. The various acts are shown in detail in Table No. 3 of the annual report for 1924. The status of the authorized bond issue, showing the amount appropriated and the balance available for appropriation within the limit of the cost of the canal and the authorized bond issue, is shown at the end of this table.

The total amount appropriated to date for the annual payments to the Republic of Panama for the use of the Canal Zone is \$4,000,000.

The total amount appropriated for the operation and maintenance, sanitation, and civil government of The Panama Canal and Canal Zone to June 30, 1927, is \$96,915,081.88. From this amount there has been returned to the surplus fund in the United States Treasury \$7,754.98, which includes \$127.36 returned to the surplus fund during the fiscal year, being the balance of the appropriation for increased

compensation, 1924. This leaves \$96,907,326 90 expended or available for expenditure.

The appropriations for the fiscal year 1928, not included in the above figures, are as follows:

Operation and maintenance.....	\$5, 830, 000
Sanitation.....	670, 000
Civil government.....	1, 100, 000
Total.....	7, 600, 000

In addition to this, there is obligated for expenditure during 1928 an unexpended balance of \$342,189 brought forward from the fiscal year 1926, and \$1,100,000 from the reserve funds.

*Table No. 5—Cash disbursements and receipts.*—The Treasurer of the United States advanced to the fiscal officers of The Panama Canal during the fiscal year 1927 the sum of \$7,102,000 and disbursed directly from the Treasury \$257,619.30, a total disbursement of \$7,359,619.30. Against this amount, the fiscal officers of The Panama Canal remitted to the Treasury the sum of \$248,558.30, and direct collections by the Treasurer amounted to \$294,080.02, a total of \$542,638.32, resulting in a net withdrawal from the United States Treasury of appropriated funds amounting to \$6,816,980.98, as compared with \$7,749,540.47 withdrawn the previous fiscal year. This difference is entirely accounted for by the fact that the paymaster reduced his cash balance on hand June 30, 1926, by more than \$1,000,000

The sum of \$785,238.42 was transferred from the appropriation for operation and maintenance to miscellaneous receipts in the United States Treasury, covering the business profits for the fiscal year 1926.

*Table No. 6—Disbursements by the paymaster.*—Disbursements to the amount of \$20,705,445.66 were made during the year by the paymaster. Of this amount, the sum of \$8,004,893.38 was for the account of the Panama Railroad Co. Employees on the gold rolls were paid \$6,917,327.30 and those on the silver rolls, \$4,434,590.49. The amount of \$1,348,634.49 was paid on miscellaneous vouchers.

Collections on the pay rolls amounted to \$4,303,945.29. Of this amount the sum of \$3,161,431.32 was collected for commissary coupon books, the remainder for miscellaneous items. Of the total collections, the sum of \$3,556,487.71 was disbursed by the paymaster, the balance, \$747,457.58, being transferred to the collector's accounts.

The Chase National Bank, of New York, Panama branch, was continued as a Government depository. The Panama Railroad account was transferred from the Chase National to the National City Bank of New York, Panama branch, on June 1, 1927. This

was done at the request of the National City Bank, in order that they might have at least 50 per cent of the Government business on the Isthmus. During the year, the sum of \$8,852,250, Panama Railroad funds, was transferred to the treasurer, New York. This sum includes \$2,002,250 cash transfer, of which \$1,046,450 was mutilated currency. Approximately \$400,000 in new currency was put in circulation by the paymaster during the year. The paymaster requisitioned \$2,372,000 from the Treasurer of the United States. Of this amount, \$522,000 was sent to the Isthmus in cash. The cash situation continued satisfactory, with the gold reserve remaining constant at about \$350,000.

*Tables Nos. 7, 8, and 9—Receipts and disbursements by the collector.*—The miscellaneous receipts collections amounted to \$24,583,022.86, of which \$24,230,009.13 was for tolls and the balance for postal receipts, taxes, fees, fines, etc., and amortization and interest on the investment in public works in the cities of Panama and Colon. Collections repaid to appropriations amounted to \$9,229,450.33. The amount handled through the collector's security deposit accounts totalled \$31,562,669.04, as shown in Table No. 5. In addition to these amounts, the collector handled independent funds consisting of clubhouse funds, trust funds, postal savings funds, money order funds, interest, and Treasury savings certificates, as shown in Table No. 7, amounting to over \$2,000,000. Collections for account of the Panama Railroad Co. amounted to \$16,015,216.71, making a total cash turnover, exclusive of the Security Deposit funds, of approximately \$51,500,000.

*Table No. 10—Salaries and wages.*—The amount of money earned by The Panama Canal employees during the fiscal year 1927 was \$11,412,461.30. Of this amount, \$6,953,565.83 was earned by gold employees, and \$4,458,895.47 by employees on the silver rolls. The total pay roll for the fiscal year 1926 was \$10,801,686.46. Of the amount paid for salaries and wages during the fiscal year 1927, \$9,642,225.34 was payable from the appropriation for operation and maintenance, \$875,452.14 from the sanitation appropriation, and \$894,783.82 from the appropriation for civil government. These figures include the employees of the business divisions, the outlay for which is collected back and repaid to the appropriation.

*Table No. 11—Accounts receivable.*—The number of bills registered during the year was 41,009, covering \$32,044,990.24, compared with 37,425 bills and \$31,033,890.68 during the fiscal year 1926, an increase of 3,584 bills covering \$1,011,099.56. This table shows in detail the bills registered for tolls by months during the fiscal year, the largest amount being in the month of March, 1927, \$2,218,070.59, and the smallest amount in November, 1926, \$1,889,103.59. The total amount of tolls bills registered was \$24,230,065.29, which is

\$1,298,085.51 more than last year. The increase in tolls in the fiscal year 1926 over 1925 was \$1,530,987.54, a total increase of \$2,829,073.05 in two years.

*Table No. 12—Comparative statement of accounts receivable.*—The uncollected bills at the end of the fiscal year 1927 amounted to \$651,660.10, compared with \$795,926.04 the previous year.

*Table No. 13—Comparative statement of accounts payable.*—Vouchers payable at the end of the fiscal year amounted to \$1,632,376.04, which is \$110,261.94 more than was outstanding at the end of the previous fiscal year. The unpaid vouchers exceed the uncollected accounts receivable by \$980,715.94.

*Table No. 14—National defense expenditures.*—This table shows the individual items which were charged off as an arbitrary proportion of the cost of constructing The Panama Canal, representing its value from a national defense standpoint. The difference between the amount so charged off and the total cost of constructing the canal is carried in the accounts as the commercial value of the canal, on which a return on the investment is expected. This account was increased during the fiscal year by \$460,160.23, of which \$60,160.23 covers the expense of fences around the locks, and \$400,000 the value at which the steamship *Panama* was carried on the books, this vessel having been sold as reported under the head of Table No. 18. The total amount now charged to national defense in order to write down the cost of The Panama Canal to a fair commercial value, as directed by the Secretary of War in a letter to the Governor, dated October 18, 1921, is \$113,122,892.83.

*Table No. 15—Canal fixed property.*—The book value of the fixed property used in connection with the transiting of vessels as of June 30, 1927, amounted to \$236,674,901.07. There were no withdrawals during the year, but additional property was set up in the capital account amounting to \$559,812.06. Two additional towing locomotives were placed in service at a cost of \$87,915.50. Additional expenditures were made in connection with the proposed Alhajuela dam, amounting to \$4,615.19. The total amount expended on this project to date is \$243,585.84, most of which is for purchase of rights and the depopulation of the area which will be submerged. The sum of \$36,311.79 was spent on additional streets and sidewalks. The sum of \$53,001.66 had been spent to the end of the fiscal year on the new municipal building, Cristobal, which was authorized at an estimated expense of \$559,000, to house the post office, police station, courts, and various other offices at the Atlantic terminal. The \$100,000 set up under the heading of storehouses is the appraised value of the old Miraflores power plant building, which is to be converted into a storehouse for locks spare parts. This was a transfer from the electric light and power system under the heading of "Busi-



ness property," and not a cash expenditure. The \$23,650.53 covering the cost of the powder magazine at Corozal is an adjustment of prior year accounts, the cost of this magazine having been charged into current operating expenses. The two buildings transferred for the use of the bureau of clubs and playgrounds at a book value of \$16,600 involved no cash, being simply a transfer on the books. Under the heading of asylums, the female ward, \$134,760.04, and the mess hall, Corozal, \$88,003.26, cover new construction and are not complete. The cost of the infirmary at the Palo Seco leper colony, \$9,894.70, is an adjustment of prior year accounts, this item having been originally charged into current operations.

*Table No. 16—Canal transit equipment.*—The amount invested in equipment used in connection with the transiting of vessels and channel maintenance was \$4,504,489.78, an increase of \$363,565.90. There were a number of reductions, principally through the sale of individual pieces of equipment, amounting to \$44,761.76. There was an increase of \$408,327.66, of which \$314,250 represents the cost of construction and book value of three new steel barges constructed in prior years, but which had not previously been added to the book value of transit equipment. These barges were constructed from depreciation or reserve for replacement funds, and in order to make these funds available, the book value of the equipment for which the replacement funds were provided was written down. During the past year it has been determined that it is better bookkeeping and accounting to retain the equipment on the books at its original cost as long as it remains in service, together with its offsetting depreciation or reserve for replacement funds, and to set up any new equipment required by the use of such funds at its cost so as to maintain a proper property record. The other increases consist of a new tug, *Coco Solo*, constructed at a cost of \$37,500; launch *Dolphin*, \$15,726.24; barge *99*, \$14,432.33; and a number of capital improvements on other items of equipment as shown in the table.

*Table No. 17—Business property.*—This table shows the entire investment in the business activities of the canal, consisting of fixed property, equipment, material and supplies, cash, work in progress, and undistributed business capital, separated according to the divisions using same. The undistributed business capital charged against the divisions is made up of a portion of the general store stock (representing the value of standard material and supplies held in reserve for the business divisions); cash; and accounts receivable registered in the transit accounts for account of the business units. The capitalization of these business units amounts to \$31,363,145.81, an increase of approximately \$1,000,000 over the previous year. These increases are principally in connection with additional fixed property and equipment which are explained under Tables 18 and 19.

*Table No. 18—Business fixed property.*—The total amount of fixed property in use by the business divisions as shown in Table No. 17 was reduced by \$844,083.77 and increased by \$1,554,198.43. The reductions include the amortization of public works in the cities of Panama and Colon amounting to \$56,388.47. The old Miraflores steam-power plant was withdrawn from the account; the building itself, valued at \$100,000, was transferred to the account "Canal fixed property," to be used later on as a locks storehouse, and the machinery, valued on the books at \$208,270.31, was surveyed for sale.

In connection with the water system, a number of units of the old Gatun-Colon water system, valued at \$42,274.99, were withdrawn when the new system was set up.

The steamship *Panama* was sold and the book value, \$400,000, withdrawn from the accounts. This vessel was constructed at Cramp's shipyard in Philadelphia in 1899. In 1905 it was purchased by the Isthmian Canal Commission from Ward & Co., agents for the New York & Cuba Mail Steamship Co., for \$650,000 for the purpose of carrying material and supplies and employees to the Isthmus. Its name then was *Harana*, which in 1906 was changed to *Panama*. At the completion of the canal \$250,000 of its value was written into "Canal construction" and from that time on it was carried in the capital account at a value of \$400,000. It was continuously operated by the Panama Railroad Co., and in January, 1926, was sold to the Alaskan Steamship Co. for the sum of \$170,000. Of this amount, \$2,029.72 was spent for towing, handling lines, and crane service. The balance, \$167,970.28, was covered into the Treasury as miscellaneous receipts toward the amortization of its original value. This amount is shown in Table No. 25 under the heading of "Proceeds from Government property."

A number of gold and silver quarters were sold, demolished, or transferred and withdrawn from the account, in the sum of \$35,650.

The increases include the expenditures on the new Miraflores power plant, the Gatun-Colon water system, and the construction of new gold quarters. The additional expenditure on the new Miraflores Diesel electric power plant was \$476,248.67, and this plant now stands on the books at \$1,443,563.25. This is not the final figure, as there are some charges which have not yet been entered on the books. A new electric substation was added at Summit at a cost of \$19,529.17. The Gatun-Colon new water system was practically complete at the end of the previous fiscal year but the expenditures were carried in "Work in process" and the amount set up in the accounts in 1927 was \$413,256.67.

Expenditures on 87 new houses at New Cristobal (all of which are not completed) amounted to \$369,832.45 to June 30, 1927, and new garage stalls were erected at a cost of \$31,460.01.

The other items included in the additions to business property, marked with an asterisk (\*), were purchased, constructed, or acquired in prior years through the use of depreciation funds or charged into current operations, and in order to get them on the financial property records they have now been set up as follows: Marine barracks erected at the Cristobal shops to house Navy personnel while overseeing work on Navy floating equipment, \$8,283.98; additional fuel-oil pipe lines at various locations as shown in the table, \$156,232.84; seven new cottages, New Cristobal, constructed several years ago from depreciation funds, \$51,408.73; and new garage stalls similarly constructed, \$26,136.58.

As explained in connection with the new steel barges referred to in Table No. 16, these items had not been previously set up in the financial property records due to source of funds from which they were constructed, and the change has been made this year so as to get all the property on the records at its original cost with an offsetting entry for depreciation or reserve for replacement. The items in this table so set up amount to \$242,062.13.

*Table No. 19—Business equipment.*—The value of equipment in use by the various business divisions of The Panama Canal at the end of the fiscal year was \$1,117,570.51. The total withdrawals amount to \$13,896.28, representing transfers, sales, and surveys. The increases, with the exception of the automobiles, cover purchases of new machinery and tools for current use. Under the heading of automobiles there is an adjustment covering the cost of automobiles purchased during prior years from depreciation funds or funds reserved for the replacement of automobiles. The amount shown was not all expended during the fiscal year, but a change has been made in the method of accounting whereby newly purchased automobiles will be set up in the capital account and the old ones will not be withdrawn from the capital account until actually retired from service. The amount purchased during prior years and set up during the fiscal year 1927 is approximately \$135,000.

*Table No. 20—Waterworks, sewers, and pavements in cities of Panama and Colon.*—The amount invested in waterworks, sewers, and pavements in the cities of Colon and Panama, reimbursable to the United States on June 30, 1927, was \$1,712,943.03, of which \$932,723.51 is in the city of Panama and \$780,219.52 in Colon.

The Panama Canal supplies water to these two cities from the Canal Zone system and maintains the sewers and streets in the two cities under a contract entered into between The Panama Canal and the Republic of Panama in 1907. The Panama Canal collects the water rentals from the residents of these two cities and uses the funds to cover the cost of the water and maintenance of sewers and streets, interest on the unamortized investment at 2 per cent per

annum and amortization based on 50 years from 1907. During the term of this contract The Panama Canal has used \$3,344,445.52 for maintenance, operation, and repairs of the water system, sewers, and streets; interest on the investment amounting to \$1,068,062.54 and \$943,933.61 repaid on the capital cost have been covered into the United States Treasury as miscellaneous receipts.

*Table No. 21—Material and supplies.*—The total store stock on hand June 30, 1927, amounted to \$4,382,709.71. The reserve for inventory store stock adjustments amounts to \$412,517.06.

*Table No. 22—Material and supplies received and issued.*—The amount of stores purchased for stock during the year was \$3,788,-828.23 in addition to which material and supplies were purchased for direct delivery to divisions at a cost of \$1,198,045.94, making the total purchases for the year \$4,986,874.17. The mechanical division manufactured material and supplies for stock at a cost of \$394,861.49 and the dredging division recovered run-of-bank gravel from the Chagres River at Gamboa at a cost of \$239,406.58, making the total local expenditures for material \$634,268.07; a grand total from all sources of \$5,621,142.24. The business divisions drew material and supplies to the extent of \$2,822,096.20 and the transit divisions \$1,671,536.05. The sales amounted to \$1,189,490.04, which includes sales to the Panama Railroad Co.

*Table No. 23—Comparative statement of material and supplies by commodities.*—This table shows the value of general store stock on hand by commodities in comparative columns for the fiscal years 1926 and 1927, the general store stock at the end of the fiscal year 1927 amounting to \$3,714,972.92. The value of fuel oil on hand was \$163,177.57; medical stores, \$67,427.78; Panama Canal Press stock of paper, stationery, etc., \$83,981.61; lock parts at Corozal store, \$438,740.91; gravel in the Gamboa gravel pile, \$250,385.20.

During the year 1927 run-of-bank sand and gravel reclaiming operations were carried on by the dredging division in the Chagres River north of Gamboa:

Quantity pumped to Gamboa, 208,140 cubic yards, at a cost of----	\$176, 892. 40
The value of old material remaining in the old pile was-----	69, 240. 32
Cost of transportation and establishing piles of run-of-bank material at Cristobal and Diablo-----	17, 388. 28
Cost of transportation and establishing piles of washed sand and washed gravel at Cristobal-----	8, 392. 99
New washing machine, Gamboa-----	32, 094. 65
Screening plant, Gamboa-----	4, 638. 26
Total-----	308, 646. 90



Local stock piles established at Cristobal and Diabolo were charged to the general storekeeper for issue and sale as follows:

6,366 cubic yards washed sand and gravel stored at Cristobal.....	\$17, 506. 50
25,472 cubic yards run-of-bank material stored at Cristobal and Diabolo.....	40, 755. 20
Total charged to the general storekeeper.....	\$58, 261. 70
Balance chargeable to the stock pile at Gamboa.....	250, 385. 20

On June 30, 1927, there were 215,436 cubic yards of old and new run-of-bank material in the pile at Gamboa which, divided into the \$250,385.20 gives an average cost in the pile of \$1.16 per cubic yard. It is contemplated to write down the value of the old material to the extent that the average cost in the pile will be \$1 per cubic yard. It is estimated that the cost of loading on cars ready for shipment over the Panama Railroad will average approximately 40 cents per cubic yard, making a total of \$1.40 on cars at Gamboa ready for shipment, and the issue and sales prices will be fixed accordingly.

*Table No. 24—Canal transit expenses and earnings.*—Under the present system of accounting, the gross operating expenses of the divisions engaged in the transiting of vessels through the canal, together with the cost of sanitation and civil government, are first reduced by the earnings in those units and the net expense is then compared with the revenues from tolls and other miscellaneous receipts.

The net cost of operation and maintenance, sanitation, and civil government of The Panama Canal and Canal Zone, exclusive of the theoretical amortization and depreciation charges, was \$8,049,474.04, compared with \$7,293,945.97 the previous year. The net expense is divided as follows:

	1927	1926
Civil government.....	\$1, 000, 675. 31	\$998, 406. 58
Sanitation, hospitalization and medical service.....	669, 948. 88	653, 509. 43
Operation and maintenance.....	6, 378, 849. 89	5, 642, 029. 96
Total.....	8, 049, 474. 08	7, 293, 945. 97

These figures do not include expenditures for improvements and construction enumerated in Tables 14 to 19, inclusive.

The gross operating costs, including the amortization and depreciation charges, were \$12,180,734.79, but these are reduced by earnings amounting to \$3,183,019.77, covering all kinds of supplies and services furnished employees for which the employees are required to pay, for pilotage, tug and launch service, handling lines for vessels, and for charges made to business divisions, which in

turn make collections for the supplies and services to the credit of the appropriations. The net expenses, including amortization and depreciation charges, amount to \$8,997,715.02.

#### EXECUTIVE DEPARTMENT

Under this heading are grouped the salaries and office supplies and expenses of the Governor, engineer of maintenance, executive secretary, correspondence bureau, personnel bureau, record bureau, etc., the shipping commissioner, cost of publishing the Canal Record, land office and law book expenses, official railroad motor cars, and clubs and playgrounds. The net executive office expenses amounted to \$211,119.38. Expenses in connection with the work of the shipping commissioner amounted to \$40,669.82. The cost of printing the Canal Record was \$14,065.99. More than one-third of the strictly executive expenses is charged off to business divisions as overhead, which is reimbursed to The Panama Canal through the various business activities by adding surcharges to direct costs.

The Government's contribution to the operation and maintenance of clubs and playgrounds has been limited to \$100,000 a year for a number of years, and everything over and above that amount paid from the receipts and profits from the operation of the clubhouses. However, during the fiscal year 1927 an additional \$20,000 was allotted for the purpose of making necessary repairs to the clubhouses themselves, making the total contribution \$120,000. The business activities of the Panama Canal clubhouses are shown in Tables 40 to 43, inclusive. The total net expenses of all units grouped under the executive department amounted to \$391,200.44, which is approximately \$28,000 more than last year, \$20,000 of which was contributed toward clubhouse expenses.

#### ACCOUNTING DEPARTMENT

The gross expenses of the accounting department on the Isthmus, including the collector's and paymaster's offices, were \$520,324.51. Of this amount, \$327,240 is charged off to business divisions and the Panama Railroad for clerical and accounting work performed for them and was absorbed in those operations in the form of overhead recovered through surcharges. This leaves the net expense of the accounting department payable from appropriations, at \$193,084.51, an increase of approximately \$13,000 over the previous fiscal year, \$10,600 of which is in the accounting department proper for increased salaries and accounting equipment, and \$2,400 in the collector's office. These increases were necessary on account of the increased volume of business done. Some of the bureaus of the accounting department, such as the railroad accounts bureau, commissary accounts and commissary coupon accounts, are entirely chargeable to the Panama Railroad.

## WASHINGTON OFFICE

The net expenses of the Washington office, including the chief of office, the purchase and inspection bureau, the assistant auditor and disbursing clerk, were \$223,169.56. From the gross expense of the purchasing bureau, the sum of \$41,583.49 was charged off to business storehouse operations on the Isthmus, representing the proportion of purchasing and inspection expenses chargeable to material and supplies purchased for use in business activities and for sale, which amount is recovered through surcharges added to the price of material.

## CIVIL GOVERNMENT

The gross expense of all activities under the heading of civil government amounted to \$1,067,306.04, of which \$66,630.73 was charged off or collected from other interests, leaving the net amount \$1,000,675.31. The net expense for the administration of estates and other civil affairs was \$17,667.85. In the customs service certain collections are made for the inspection of household goods and personal effects for shipment to the States. The gross post-office expenses were reduced by \$11,744.80, collected for the handling and transferring of mails other than Canal Zone, leaving the net expenditure of \$156,858.79. The net cost of operating the school system, including the two high schools, was \$260,604.29, after deducting \$9,751.48 for school tuitions and the proceeds from the sale of school books and supplies. The gross expense of the police department, including the prisons and penitentiary, was \$397,410.59, of which \$44,633.11 was recovered for police services furnished the Panama Railroad.

## HEALTH DEPARTMENT

The gross cost of operating all hospitals, asylums, quarantine and public health service, sanitation, and street cleaning was \$1,482,473.98, and the earnings amounted to \$812,525.10, leaving the net expenditure from appropriation \$669,948.88. The largest amount of revenues derived from the operation of any single unit was at Ancon Hospital, amounting to \$372,318.27. The gross expenses of operating Corozal cripple farm and insane asylum amounted to \$189,753.39, of which \$164,016.94 was recovered from the Republic of Panama for taking care of its insane and from the sale of produce from the farm, leaving the net expense to the Government only \$25,736.45. The Panama Canal's share of the cost of street cleaning and garbage disposal in the cities of Panama and Colon was cut in half during the year. Under prior arrangements for a number of years The Panama Canal stood 50 per cent of this cost in the city of Colon and the Republic of Panama the other 50 per cent and for the same work in the city of Panama, the Republic of Panama contributed a flat sum of \$38,000

and The Panama Canal stood the balance of the cost. The Panama Canal's proportion in both cities was approximately \$50,000 prior to the fiscal year 1927. Under date of July 27, 1926, the Secretary of Foreign Relations addressed a letter to the executive secretary, agreeing that effective August 1, 1926, the Republic of Panama would pay 75 per cent of the cost of street cleaning and garbage disposal in both Colon and Panama, and this new arrangement has reduced The Panama Canal's proportion to approximately \$25,000 per year. As an offset against this reduction in 1927, the quarantine service expenses were approximately \$14,000 greater than the previous fiscal year and the expenses at Palo Seco leper colony approximately \$12,000 greater.

#### OFFICE ENGINEER, METEOROLOGY AND HYDROGRAPHY AND SURVEYS

The gross cost of planning and drafting, blue printing, etc., was \$69,690.21, of which \$54,047.82 was charged off to business operations and construction work, leaving the net expense from appropriation at \$15,642.39, which is slightly in excess of the net expense during the previous year.

During the year the sections of meteorology and hydrography and surveys were combined under one head, the hydrographer being placed in charge of both, and the former head of the section of surveys being placed in charge of the northern district of the municipal engineering division. The net expense of the division of meteorology and hydrography was \$34,278.52 and of the survey work \$33,283.64.

#### GENERAL STOREHOUSES

The gross cost of operating the general storehouses, including the handling and transportation of materials and supplies on the Isthmus, was \$541,355.59, of which amount \$223,929.12 was charged to business storehouse operations, representing that part of the general storehouse expenses chargeable to material used by business divisions and sold, which is recovered through surcharges added to the price of the material. The net store operating cost payable from the appropriations was \$317,426.47, which is slightly less than the previous year.

#### PUBLIC BUILDINGS AND GROUNDS

The gross expense of the chief quartermaster's office and the four district quartermasters, was \$401,204.98. This expense is reduced by \$231,450.32 covering services and supplies charged to employees, business divisions, the Panama Railroad, etc., for general utility service, janitor service, care of grounds chargeable to employees, sale of gasoline, mattress-factory operations, etc. The net expense payable from appropriation for care of buildings and grounds was



\$169,754.66, which includes the cost of operating and maintaining the Administration Building at Balboa Heights.

## MISCELLANEOUS

The cost of lighting streets and roads of the Canal Zone was \$15,454.40, which is approximately \$3,400 less than the previous year.

The item of \$23,400 for water for municipal purposes is a fixed figure credited to the municipal engineering division for watering public grounds, flushing sewers, and for water supplied to swimming pools.

The cost of maintaining roads, streets, and sidewalks was \$104,069.33, which includes some construction work not of sufficient importance, however, to be set up as a capital addition. The sum of \$120,000 was available by appropriation and the difference between this and the actual amount spent on maintenance was used for the purchase of capital items shown in the tables covering property and equipment.

The expenditure on storm sewers for the proper drainage of town sites was \$15,781.68, as compared with \$18,838.42 the previous year.

The cost of maintaining railroad tracks owned and operated by The Panama Canal was \$23,594.57.

The cost of recruiting and repatriating employees was \$21,182.65.

The lump sum paid the Panama Railroad for the transportation of Panama Canal employees on the Isthmus has been \$120,000 per annum for a number of years. A large part of this expense represents the cost of transporting ships' line handlers to their home stations after transiting the canal.

The expenditures on laborers' quarters were limited to the funds available, the exact amount appropriated being \$95,000, of which \$94,962.06 was expended. Under the present arrangement, the rent collected from silver employees occupying Panama Canal quarters is somewhat less than the actual cost of operating those quarters, but the silver employees' wages are fixed on the basis of living costs and if the rents were increased, their salaries would also have to be correspondingly increased in order to maintain the ratio, and the payment of higher salaries, then charging more rent, would also have the undesirable effect of having more of the silver employees live in the cities of Panama and Colon. The deficit therefore, from the operation of silver quarters, is first covered from this appropriation of \$95,000, and the balance is used for extraordinary repairs to silver quarters. During the fiscal year 1927 the difference between the cost of operating silver quarters and the rent paid by the occupants was \$47,843.26.

## MARINE DIVISION

The gross expense of the marine division, including the port captains' offices, dispatching vessels through the canal, board of admeasurement, board of local inspectors, pilots, tugs, launches, handling lines, and aids to navigation, all of which have to do with the transiting of vessels through the canal, amounted to \$1,538,121.33. Against this expense, the marine division earnings amounted to \$1,152,638.22, leaving a net expense of only \$385,483.11, as compared with a net expense of \$427,775.45 the previous fiscal year. The collections from vessels for harbor pilotage amounted to \$324,646.15, as compared with approximately \$292,000 the previous year. The gross expenses of operating tugs and launches at both ends of the canal, were \$497,237.86, whereas the revenues derived from the service of this equipment amounted to \$529,912.50, an excess of \$32,674.64 over cost. Last year the expenses exceeded the revenues by approximately \$37,000. Collections from vessels for furnishing line handlers exceeded the amount paid for this service by \$12,440.02.

## AIDS TO NAVIGATION

The net cost of operating the lighthouse subdivision in connection with the purchase, installation, and maintenance of aids to navigation, was \$196,543.90 as compared with \$171,885.26 the previous year. A large part of this expense is in connection with the purchase, repair, and replacement of buoys.

## LOCKS OPERATION

The cost of operating the Gatun Locks was \$453,935.26. These locks were overhauled during the first few months of 1927 at a cost of \$529,961.62, making a total of \$983,896.88 expended in connection with the Gatun Locks during the year. The cost of operating and maintaining the locks at Pedro Miguel was \$371,295.70 and at Miraflores, \$473,011.74. The cost of operating the locks storehouse at Corozal was \$8,939.70. This old storehouse at Corozal has about outlived its usefulness and it is contemplated to transfer the locks spare parts to the old Miraflores steam power plant building as soon as that building can be placed in shape for storehouse purposes and its location connected up with the Miraflores locks by a bridge and road across the spillway, which is authorized and under construction. The sum of \$1,179.49 was spent on the Miraflores spillway during the year. The amount expended at all locks, including the cost of overhaul at Gatun, was \$1,837,684.47. The net cost of maintenance of the Gatun Dam and Gatun spillway was \$54,135.05.

## DAMAGES TO VESSELS

The amount actually expended during the year in connection with damages to vessels in the locks was \$265; \$175 for damages to the steamship *James McGee* and \$90 for damages to the steam-

ship *Commercial Trader*. The amount expended for damages to vessels in the canal outside of the locks amounted to \$598.55; \$373.50 for damages to the steamship *Santa Teresa* at Dock 6, Balboa; \$95 for damages to the steamship *Piave* in Balboa Basin; \$95.69 repairs made by the mechanical division to cable ship *Relay* damaged at Dock 14, Cristobal; and \$34.36 repairs made by the mechanical division to the steamship *Bologna* damaged at Cristobal Harbor. There was a total of 60 accidents to vessels during the year, out of which The Panama Canal was held responsible for 12. Total amount of damages to vessels during the year amounted to \$134,455, The Panama Canal being responsible for \$4,770 and have already paid of this amount \$863.55. Besides the amounts paid, there are a number of claims on which the board of local inspection has found The Panama Canal responsible and on which settlement will be made with the owners or operators when the actual costs of repairs are determined the next time the vessels go into dry dock for general overhauling.

#### DREDGING AND CHANNEL MAINTENANCE

The total cost of operating the dredging division payable from the appropriation was \$2,304,398.83, compared with \$1,967,479.22 the previous year. This includes an expense of \$39,493.09 for removing floating obstructions from the canal channel and lake and \$60,325.17 for maintaining the two large floating derricks *Ajax* and *Hercules*. The balance is for channel and harbor maintenance including a considerable expense for deepening the Pacific entrance. Work was continued on the deepening of the canal channel from the Pacific entrance to the Miraflores locks to a depth which will permit of the movement of vessels in that channel at low tide. The yardage so excavated, the class of equipment used, locations, and unit costs are shown in Table No. 34.

#### AMORTIZATION AND DEPRECIATION

The sum of \$305,855 for amortization and \$642,385.94 for depreciation was added to the actual operating costs for the year in order to arrive at the theoretical total cost in comparison with the revenues earned. This brings the grand net total to \$8,997,715.02. The amortization charge represents a figure which at 3 per cent compound interest will, in 100 years, amortize the value of canal fixed property used in connection with the transit of vessels, whose life is estimated to be 100 years. The depreciation figure represents a certain per cent of depreciation on items of canal fixed property estimated to have a life of less than 100 years, which is considered sufficient to cover the replacement of such property at various intervals up to 100 years. These items represent no expenditure of funds, nor are the amounts set aside in a reserve fund. The entire toll and other



miscellaneous receipt collections are covered into the United States Treasury, and these amortization and depreciation figures are carried on the books as being theoretically available in the United States Treasury for the amortization and replacement of the items depreciated. These entries on the books are entirely different from the depreciation or reserve for replacement in connection with transit and business equipment and business property, for which the funds are actually reserved and available for expenditure.

The amortization is at a fixed figure of \$350,000 per year, but in the fiscal year 1926, the charge was erroneously entered at \$394,145 and therefore in the year 1927, only \$305,855 was charged in to make a total of \$700,000 for the two years. The fiscal year 1928 will have a flat charge of \$350,000 again. The items of construction so amortized on the assumption that they will have a life of 100 years or more consist of the prism excavation expense along the whole line of the canal, approximately \$134,000,000; and the concrete work, excavation, and fill at all the locks, spillways, dams, breakwaters, and certain concrete buildings, including the Administration Building at Balboa Heights, approximately \$70,000,000. The items which are being depreciated on a percentage basis at a life estimated at less than 100 years consist of the ironwork and machinery at all the locks and spillways, including the towing locomotives, lock gates, control-house machinery, emergency dams, aids to navigation, such as gas buoys, signal stations, beacons, towers, etc., sewers, roadways, and a number of buildings, carried on the books at the time the depreciation was started in 1921, at approximately \$30,000,000. During the first five years up to June 30, 1926, depreciation was charged in at the rate of 1 per cent per annum on the book value. The amount charged in during the fiscal year, \$642,385.94, represents 2 per cent per annum, which is to be charged in for a period of 10 years, after which the rate is to be  $2\frac{1}{2}$  per cent for another 10 years, and 3 per cent thereafter. These percentages were tentatively fixed in ratio to the anticipated increase in the number of vessels using the canal and the annual toll receipts.

*Table No. 25—Canal transit revenues.*—This table shows a comparison of the amounts deposited in the United States Treasury as miscellaneous receipts during the fiscal years 1926 and 1927. The amount of tolls earned during the fiscal year 1927 was \$24,217,185.32, as compared with \$22,927,456.03 the previous fiscal year. The taxes, fees, and fines collected amounted to \$67,356.25; the postal receipts from the sale of stamps, etc., amounted to \$146,099.74, approximately \$3,000 more than last year, the details of which are shown in Table No. 38. The total canal revenues which will be covered in as miscellaneous receipts, amounted to \$24,608,808.82. This includes an item of \$167,970.28 representing the net proceeds from the sale of the *Panama*.



The foregoing figures are exclusive of the profits from business operations amounting to \$876,536.80, shown in Table No. 26, which will be covered in as miscellaneous receipts, and the \$3,183,019.77 earnings shown in Table No. 24, which were repaid to appropriations. The \$197.23 miscellaneous receipts consist of \$14.13 pay car overages and \$183.10 proceeds from the sale of unclaimed mail matter.

*Table No. 26—Business expenses and revenues.*—This table shows the business operations of The Panama Canal as separate and distinct from the operation and maintenance activities directly connected with the transiting of vessels. Under the annual appropriation act, The Panama Canal is authorized to use funds appropriated for the operation and maintenance of The Panama Canal in conducting auxiliary business enterprises with the provision that funds so used will be recovered and repaid to the appropriation to be used for the purposes for which they were originally appropriated and with the further provision that any profits derived from such business activities be covered into the United States Treasury as miscellaneous receipts annually.

#### ELECTRICAL DIVISION

The electric light and power system includes the operation of the Gatun hydroelectric plant, the Miraflores steam electric plant, operation of substations, transmission lines, and distribution system, detailed cost of which is shown in Table No. 32. The basic rate for electric current to departments and divisions of The Panama Canal, Panama Railroad, and other departments of the Government, remained  $1\frac{1}{4}$  cents per kilowatt hours during the year. The basic rate to outsiders is 4 cents per kilowatt-hour. The total cost of producing and distributing electric light and power was \$478,848.65 and the net revenue \$257,400.44. During the year the operation of the old Miraflores steam power plant was discontinued and the plant dismantled, and the new Diesel electric plant placed in service. This will eliminate a considerable part of the stand-by expense incurred in prior years and the cost of a considerable amount of fuel oil. It is estimated that the operating cost of the new plant will be considerably less than that of the old, but the depreciation charge on the new plant will be considerably greater than the old.

The other operations of the electrical division, including electrical installation and repair work not chargeable to the production and distribution of electric light and power, amounted to \$828,507.93, which includes the value of the equipment installed.

The cost of operating and maintaining the telephone, telegraph, and automatic signal systems for the Panama Railroad was \$185,638.38 as compared with \$248,842.80 the previous year. The greater

part of the reduction in operating cost is due to the substitution of the automatic telephone system for the old manual system and the elimination of a considerable pay roll covering manual operators. The cost of the new automatic telephone system was approximately \$550,000, financed by the Panama Railroad. The entire amount expended by the electrical division for operating the telephone, telegraph, and signal systems is charged to the Panama Railroad, which receives the revenues derived from the service, and the net results are shown in the Panama Railroad annual report.

#### MUNICIPAL ENGINEERING DIVISION

The water system involves the operation of pump stations, filtration plants, reservoirs, and pipe lines for the production, filtration, and distribution of water throughout the Canal Zone and in the cities of Colon and Panama, including water delivered to vessels using the terminals and transiting the canal. The rate for water to departments and divisions of The Panama Canal, Panama Railroad and other departments of Government, was maintained at 12 cents per thousand gallons during the entire fiscal year, which represents the actual cost of production and distribution. The rate for water delivered to vessels is 50 cents per thousand gallons. The total cost of operating the system was \$484,743.62. The net revenue of \$30,613.87 includes an item of \$23,400 to cover the value of water used for municipal purposes and the balance represents an excess of revenue over the actual cost of production. This net revenue, however, lacks approximately \$50,000 of covering 3 per cent on the investment, which represents the water and water facilities provided by the municipal engineering division for fire protection, for which the municipal engineering division receives no book credit.

The cost of municipal engineering work performed outside of the cost of water, amounted to \$1,125,746.92. This includes the cost of operating the incinerator at Cristobal, and excavation, filling, concrete, and street work performed for the various departments and divisions of the canal, railroad, other departments of Government, and the Panaman Government. The expenditures, revenues and return on the investment in public works in the cities of Panama and Colon, which are operated and maintained by the municipal engineering division, are explained under Table No. 20.

The cost of operating the water system includes an arbitrary charge of \$30,000 set aside as depreciation or reserve for replacement. The cost of municipal work performed includes an arbitrary charge of \$30,000 to create a reserve for the cost of moving the asphalt plant from Corozal Road to Sosa Hill quarry, and partly to move the municipal engineering material yard from Aneon to Sosa Hill.

## MECHANICAL DIVISION

The total expense of shop and dry-dock operations amounted to \$3,018,585.65, and the revenues, \$3,067,711.86, leaving a net revenue of \$49,126.21. The expenses include a charge of \$39,899.30 to cover the balance of the cost of reroofing certain of the shop buildings at Balboa, and \$80,000 to create a reserve for the construction of a new boiler shop at Cristobal and toward the cost of lengthening the Cristobal dry dock. The expense and revenue figures include the cost of work performed for departments and divisions of The Panama Canal, Panama Railroad, and other departments of Government, including the maintenance of Panama Railroad rolling stock, which service is performed approximately at cost, and the profit represents the excess of revenues over expenses for work performed for outsiders, including repairs to vessels. A surcharge of 35 per cent is added on direct labor to cover shop overhead.

## WHARFAGE

Pier 18 at Balboa and Pier 6 at Cristobal are owned by The Panama Canal but operated by the Panama Railroad. The Panama Canal receives the wharfage paid by vessels for occupying berths at these piers and pays for the cost of repairs to the piers. The wharfage revenues amounted to \$92,024.38 and the maintenance expenses, \$71,918.21, leaving a net revenue of \$20,106.17. Last year the maintenance expenses exceeded the revenues by \$20,807.53. Three per cent interest on the investment in these two piers would amount to \$71,046, but they are not used to full capacity commercially and the Navy has considerable space on Pier 18, Balboa, for a comparatively small rental per year.

## FUEL-OIL HANDLING PLANTS

The cost of operating the pumping plants at Balboa and Mount Hope was \$369,159.06 and the revenue from pumping (including \$1,074.20 tank rentals) was \$668,731.23, leaving a net revenue of \$299,572.17. It is apparent that the pumping charges are considerably in excess of the cost of pumping and maintaining the pumping plant, but a good part of the profits have consistently been reinvested in additional pipe line and other facilities requested by shipping, and The Panama Canal has for a number of years fixed its sale price for fuel oil at a figure considerably in excess of the current prices so as to entirely stay out of competition with other oil companies which maintain stocks of oil here for sale. For a number of years The Panama Canal was selling oil on a competitive basis, and the profits from such sales ran as high as half a million dollars per year.

## BUSINESS STOREHOUSE OPERATIONS

The value of general store material and supplies, including fuel oil issued to the business divisions of The Panama Canal, together with the value of the material sold directly to outsiders and the storehouse expense chargeable against such material, amounted to \$4,074,519.59. The revenues exceed the costs by \$103,621.96, a part of which represents profit on the sale of material and the balance represents the difference between the operating expense charged to this account and the surcharge added to the price of material. The surcharge to departments and divisions is 10 per cent, and on material sold to outsiders, 25 per cent. The value of fuel oil included in this account was \$456,520.67. Included in the gross charges are the following amounts set aside to create reserves: \$25,000 to cover the cost of the removal of Pier 4, Balboa, and reerection at Cristobal; \$20,000 for reroofing storehouse buildings at Balboa; \$15,000 for a new locomotive crane for storehouse use; and \$5,000 for miscellaneous storehouse equipment.

## MISCELLANEOUS OPERATIONS

The cost of operating the motor transportation division was \$395,125.62.

The motor-car repair shop did a business amounting to \$185,685.92.

The operating costs of the building division, including both construction and maintenance of buildings, amounted to \$1,760,338.35. These figures include the \$500,000 annual building program going on now. The sum of \$25,000 was charged into operations in 1927 to create a reserve for the purchase of some necessary new machinery and tools.

The operating cost of The Panama Canal press was \$264,995.86, which includes an item of \$15,000 charged in to create a reserve for the contemplated transfer of the printing plant from its present location to the commissary warehouse, Cristobal.

The expenses of operating and maintaining gold quarters were limited to the amount received in rent from the occupants, the amortization, depreciation, and interest on the investment having previously been authorized to be expended for the proper housing of employees.

The rent collected from silver employees for the occupation of silver quarters was \$194,800.07, which is \$47,843.26 less than the cost of operating and maintaining these quarters. The deficit was charged to the allotment for maintenance of laborers' quarters referred to under Table No. 24.

Under the heading of building rentals are included the rentals from garages, boat houses, restaurants, and markets. The revenues derived from these sources amounted to \$67,818.53, which was \$12,497



in excess of the maintenance costs. The expenses include an item of \$10,000 set aside as a reserve for garage building extension.

The district quartermasters supplies and services amounted to \$194,136.93, which is \$7,883.66 in excess of the revenue derived from this source. In 1926 the loss was over \$30,000. The greater part of the loss in 1927 accrued during the first five months of operation, after which a change was made in the method of accounting, which it is hoped will entirely eliminate the losses.

The cost of operating the Hotel Tivoli was \$222,257.23 and the profits amounted to \$26,737.03, as compared with a profit of \$30,633.85 the previous year.

The expenses under the heading of farm bureau and land rentals include the expenses of the agronomist, experimental farm, and plant introduction, which are limited to \$24,000 per annum. The revenues include the rentals from agricultural licenses and the proceeds from the sale of produce, which exceeded the expenses by \$7,283.50.

The cost of maintaining the salvage section as an aid to navigation was \$91,354.58 against a revenue of \$46,820.35, resulting in a net expense of \$44,534.23. This loss is due to the fact that a complete salvage unit is maintained to give prompt assistance to ships in distress, although the revenue derived from this source is not commensurate with the expensive plant maintained.

The difference between the cost of sand and gravel issued and the revenue shown in this table is not an actual loss. During the fiscal year a considerable amount of new run-of-bank material was produced, and it is contemplated to write down the value of the old material and fix the issue and sales prices at a figure which will cover the average cost. The cost of production is shown under the heading of Table No. 23.

The profit from the sale of nautical charts and publications was \$948.64.

The gross revenues from all business operations amounted to \$15,878,654.57 compared with \$15,874,478.01 the previous year. The profits to be covered in as miscellaneous receipts amount to \$876,536.80 compared with \$841,310.29 in 1926, which is somewhat in excess of 3 per cent on the entire investment in these business activities.

*Table No. 27—Surplus.*—The gross canal transit revenues since the opening of the canal amount to \$169,081,920.81, and the corresponding expenses, \$95,077,644.54, making a surplus of \$74,004,276.27. During the same period the revenues from business operations amounted to \$149,365,805.60, and the expenses, \$143,416,206.34, making a total business profit to June 30, 1927, of \$5,949,599.26. The combined surplus to date amounts to \$79,953,875.53. The canal transit expenses, however, include annual charges for theo-

retical amortization and depreciation amounting to \$2,100,000 and \$2,163,814.34, respectively, a total of \$4,263,814.34, which added to the surplus shown above makes a total of \$84,217,689.87, representing the difference between actual operating expenses and revenues.

*Table No. 28—Collections from gold employees.*—The total amount collected from gold employees for house rent, supplies, and services was \$898,940.78, an increase of more than \$200,000 over the previous year. The collections are detailed as follows: House rent, \$377,928.22; electric current, \$57,687.14; water, \$28,141.87; telephones, \$27,988.32; garage rentals, \$35,091.44; hospital charges, \$51,242.65; miscellaneous, \$320,861.14.

*Tables Nos. 29 and 30—Reserves for repairs and replacements.*—Table No. 29 was changed. In the fiscal year 1926 it included accrued depreciation on canal fixed property whose life is estimated at less than 100 years and which is being theoretically depreciated at a rate which placed on 3 per cent compound interest would be sufficient to renew and replace this property up to 100 years. To carry out this scheme, interest has been added to the accrued depreciation annually, which was also included in Table No. 29 in 1926. Since no funds are actually reserved for these items, they have been omitted from the table this year and only depreciation shown for which funds are actually available for expenditure.

The theoretical amortization and theoretical depreciation are shown in the general balance sheet separately, calculated as follows:

Amortization charged into operating expenses to June 30, 1927..	\$2, 100, 000. 00
Plus theoretical interest on same.....	165, 069. 41
Total.....	2, 265, 069. 41
Depreciation charges to June 30, 1927.....	2, 163, 814. 34
Plus theoretical interest on same.....	675, 001. 48
Total.....	2, 838, 815. 82

Up to the end of the fiscal year, theoretical interest was calculated on the unfunded depreciation and on the funded reserve for replacement. Interest on the replacement fund has been discontinued.

The total reserve for replacement at the end of the fiscal year as shown in Table 29 was \$3,023,792.39 and the reserve for extraordinary repairs, as shown in Table No. 30, \$1,987,511.57, a grand total of \$5,011,303.96 available for extraordinary repairs, renewals, and replacements of equipment and business property.

On July 1, 1926, the replacement reserve amounted to \$3,640,790.40, to which was added during the year, by charges into operations and by transfer from the repair reserve \$968,638.24, making a total of \$4,609,428.64. During the fiscal year there were used or released from this replacement reserve the following amounts in round numbers: New tug *Coco Solo* (part), \$19,000; launch *Dolphin*, \$16,000;

barge 99, \$14,000; motor vehicles, \$57,000; new garages, \$18,000; extension fuel-oil lines, \$59,000; reroofing gold quarters, etc., \$43,000; miscellaneous tools and machinery, \$87,600; Brazos Brook Reservoir written out, \$15,000; old Miraflores steam power plant written out, \$157,000; loan to the budget for current operating expenses, \$1,100,000.

On July 1, 1926, the reserve for extraordinary repairs amounted to \$1,803,731.42, to which was added during the year \$1,020,766.92, making a total of \$2,824,498.34. From this amount was expended for repairs during the year \$699,371.10, and transferred to the reserve for replacements, \$137,615.67, a total of \$836,986.77, leaving the balance on June 30, 1927, at \$1,987,511.57.

Against the combined reserves available for repairs and replacements at the end of June, 1927, \$5,011,303.96, we already have the following obligations: Loan to the budget for operation and maintenance requirements for 1928, \$500,000; new Diesel dredge, \$1,050,000; two new tugs, \$575,000; improvements, Cristobal shops, \$100,000; reroofing Balboa shops, \$130,000; extension fuel-oil system, \$100,000; replacements of tools, machinery, and equipment, \$145,000; total, \$2,600,000, which leaves only \$2,400,000, of which approximately \$2,000,000 is continuously obligated for periodic overhauling and extraordinary repairs to equipment in constant use.

*Table No. 31—Reserve for gratuity.*—The amount of cash held in reserve for vacation pay due the employees of the four principal business divisions is \$519,157.12. This fund is created by adding a percentage to the gold labor charges for work performed by business divisions and represents a live liability, being immediately payable when the employees take their vacations or leave the service.

*Table No. 32—Electric current.*—The cost of operating the hydroelectric plant at Gatun was \$80,539.42; the old Miraflores steam power plant to the end of 1926, \$54,099.61; new Diesel electric plant since January 1, 1927, \$47,578.60; substations, \$149,403.15; transmission lines, \$49,604.40; distribution lines, \$97,623.47; making a total cost of production and distribution of \$478,848.65. The total kilowatt-hour production was 57,861,918, and the unit cost, \$0.0083. This cost of course is exclusive of the fixed capital charge.

*Table No. 33—Water.*—The total cost of operating the pump stations, filtration plants, reservoirs, and pipe lines in the Pacific system during the fiscal year, including the overhead expenses, was \$261,579.30, on a production of 2,923,873,000 gallons, resulting in a cost of \$0.0895 per thousand gallons as compared with \$0.0938 last year. The total operating cost in the Atlantic system was \$164,760.39 on 1,920,363,000 gallons, resulting in a cost of \$0.0858 per thousand gallons, as compared with \$0.0911 per thousand gallons last year. The average cost for the year for pumping, filtering, and distributing



water in the Canal Zone and in the cities of Panama and Colon was \$0.088 per thousand gallons.

This table shows the proportion chargeable for water delivered in the cities of Panama and Colon separate from that chargeable for water used in the Zone, the average cost for water delivered to Panama City being \$0.0754, and to Colon City, \$0.0530, an average for the two cities of \$0.0677 per thousand gallons. The average cost of water used in the Canal Zone was \$0.1007 as compared with \$0.1073 per thousand gallons in the previous year.

*Table No. 34—Dredging.*—The dipper dredges excavated material in Gatun Lake, Gaillard cut, and at the Pacific entrance of the canal, to the extent of 2,792,650 cubic yards at a cost of \$0.5502 per cubic yard. The suction dredges removed 2,551,850 cubic yards of material from the Atlantic entrance, Cristobal Harbor, Gatun Lake, Balboa Harbor, and Pacific entrance, at a unit cost of \$0.1753. The total amount expended during the year on dredging was \$1,983,846.48 on a total yardage of 5,344,500, or an average of \$0.3712 per cubic yard.

*Tables Nos. 35 and 36—Money orders.*—During the fiscal year 147,789 money orders were issued in the Canal Zone, amounting to \$2,754,573.04. Money orders, including deposit money orders, cashed by post offices in the Canal Zone, amounted to \$1,175,437.25. Canal Zone money orders paid in the United States amounted to \$1,875,121.10. Interest paid on deposit money orders amounted to \$12,121.70.

*Tables Nos. 37 and 38—Postal service revenues.*—The revenue from money-order fees, stamp sales, post-office box rent, and newspaper postage was \$146,744.71. The stamp sales alone amounted to \$116,472.66. Interest earned on money-order funds on deposit amounted to \$24,101.53. Table No. 37 shows the comparative postal-service business by years from 1907 to 1927, inclusive.

*Table No. 39—Postal savings.*—Postal-savings money orders were issued in the amount of \$713,685. The amount paid was \$709,785, and the amount remaining on deposit June 30, 1927, was \$469,715.

*Tables Nos. 40 to 43, inclusive—Panama Canal clubhouses.*—Table No. 40 shows the income from clubhouse operations in detail, amounting to \$469,640.09. Table No. 41 shows the expenses of operating the clubhouses, \$472,711.99. Table No. 42 shows the net result of operation at each clubhouse, the total net result showing a loss for the year of \$4,722.89. Table No. 43 shows the current assets and liabilities. Prior to the fiscal year 1927, capital additions and improvements were charged in as operating expenses and any difference between the expenses and revenues for the year was withdrawn from the accumulated surplus of prior years, but during the year the accounting system was changed so as to set up the property pur-



chased or constructed from net revenues and surplus in a capital account. The items set up so far amount to \$69,905.70, the details of which are shown in the table. The value of salable material and supplies on hand at the end of the fiscal year was \$18,411.35 and the bills collectible amounted to \$11,511.73. Against these assets there were bills payable amounting to \$40,092.03 and the net accumulated surplus to June 30, 1927, was \$105,316.69. These surplus funds are in possession of the collector, who has them on deposit in the bank at interest, the interest earned being shown in Table No. 40.

*Table No. 44—Coupon books.*—The total amount of coupon books issued to employees and paid for by deductions on the pay rolls, was \$3,878,122.50 and the value of books sold for cash was \$1,825,900. In addition to these, books were issued on charge accounts amounting to \$169,020, making a grand total of \$5,873,042.50, an increase of \$300,000 over the previous fiscal year. The value of coupon books lifted in the commissaries in exchange for goods was \$5,486,376.80; at Panama Canal clubhouses, \$137,637.02; at restaurants, \$228,033.64; at the hotels Tivoli and Washington, Y. M. C. A.'s, etc., \$10,036.03; a total of \$5,862,083.49.

*Tables Nos. 45 to 51, inclusive—Personal injuries.*—The settlement of claims arising out of personal injuries to employees of The Panama Canal, Panama Railroad, and Panama Railroad Steamship Line, was continued in accordance with the act of September 7, 1916, and Executive order dated September 15, 1916, which transferred the administration of the act, so far as the canal and railroad employees are concerned, to the Governor of The Panama Canal. Under this Executive order, the Governor directed the auditor to designate an employee of the accounting department as claim officer. The contents of these tables are self-explanatory and the report of the claim officer is attached hereto as Table No. 61. The total amount of injury compensation paid during the fiscal year was approximately \$43,000.

*Table No. 52—Commissary purchases and sales.*—The cost of goods purchased during the year amounted to \$7,356,407.48 and the proceeds from the sale of supplies at wholesale and retail prices combined amounted to \$9,128,580.10, as compared with \$8,731,841 the previous year. The profits from all commissary operations, including these sales and the net results from the various manufacturing plants, were \$320,754.03, as compared with \$251,046.56 the previous year.

*Table No. 53.*—This table shows collections from other than employees for house rent and allied charges, such as electric current, water, janitor service, and telephone, amounting to \$63,455.75.

*Table No. 54.*—This table shows the monthly collections from Panama Railroad real estate rentals, \$189,566.05, and Panama Canal market stalls, \$2,349.43. It also shows the number of agricultural licenses and the corresponding rental, \$39,477.59.

*Table No. 55.*—This table shows the silver quarters available and the monthly rental value, together with the actual collections made from silver employees during the fiscal year.

*Table No. 56—Panama Canal vouchers registered.*—The total number of bills passed for payment during the year was 2,652, covering \$4,947,021.09, of which \$1,369,479.01 was payable from appropriations and \$3,577,542.08 from trust funds, principally the value of commissary coupon books deducted on the rolls from Panama Canal employees and paid to the Panama Railroad.

*Table No. 57—Panama Railroad accounts payable vouchers.*—The total number of Panama Railroad accounts payable vouchers passed for payment was 4,588, as compared with 3,609 the previous year. The amount covered by these vouchers is \$4,705,277.44.

*Table No. 58—Bonded employees.*—This table shows the total number of Panama Canal and Panama Railroad employees bonded with the Maryland Casualty Co. On June 30, 1927, there were 538 employees under bond in the amount of \$862,500 on which the premiums amount to \$1,360.15. This is exclusive of the paymaster and his employees, and the collector, whose bonds are handled by themselves directly with the surety company.

Defalcations under these bonds amounted to \$4,584.23 during the year. At the Hotel Tivoli, \$1,296.65 was stolen presumably through the negligence of the night clerk in not closing the safe and going to sleep. At the Balboa obsolete storehouse, the sales clerk falsified the records to the extent of \$206.77. In the district court, Cristobal, the acting assistant clerk of court appropriated the sum of \$2,540.81 to his own use, and at the post office, Corozal, the postmaster appropriated \$440 from postal funds for his own use.

The theft at the Hotel Tivoli included checks amounting to \$287, on which payment was stopped and that much of the loss avoided. The cash stolen amounted to \$1,009.65, against which the night clerk's salary and vacation due were applied to the extent of \$304.53, and the balance, \$705.12, was paid by the bonding company. The bonding company also paid \$206.77 to cover the shortage at the Balboa obsolete storehouse. In connection with the shortage at the district court, Cristobal, salary and vacation pay, and retirement-fund deductions were applied against the shortage, leaving \$1,857 to be paid by the bonding company, which was paid by that company. The postmaster at Corozal had sufficient funds due him from salary and vacation pay to cover his shortage. The bonding company, therefore, paid altogether \$2,768.89. The Panama Canal lost nothing.

This is the first time it has been necessary to call on the Maryland Casualty Co. for payments in connection with defalcations since the employees have been bonded with that company, July 1, 1914,

during which period the premiums paid have amounted to approximately \$14,500.

*Tables Nos. 59 to 66, inclusive.*—These are reports by various bureau and section heads, which are self-explanatory.

*Tables Nos. 67 and 68—Origin and destination of cargo.*—These tables show by geographical areas the origin and destination of cargo passing through the canal during the past four fiscal years. During these four years approximately two-thirds of the cargo passing from the Atlantic to the Pacific through the canal originated on the east coast of North America and about one-half was consigned to the west coast of North America. The preponderance of traffic between the east and west coasts of North America is also shown by the Pacific to Atlantic cargo movement, as over two-thirds of the cargo moving in this direction originated on the west coast of North America and approximately the same proportion was destined to the eastern seaboard of North America. General traffic between the east and west coasts of North America has grown rapidly during the four years under comparison; this is not indicated by the table for the reason that there was a very heavy United States intercoastal movement in mineral oils in the fiscal year 1924 and this element has declined since, though it has been replaced largely by a similar movement in other commodities.

*Table 69—Total traffic through the canal by nationality and fiscal years.*—This table covers the total traffic through The Panama Canal during the 14 fiscal years since its opening, segregated by nationality of vessels and showing transits, Panama Canal net tonnage, tolls, and tons of cargo. During this period vessels flying the flags of the United States and Great Britain have comprised about three-fourths of total traffic through the canal, their percentages being:

*United States.*—Transits 45.2 per cent; Panama Canal net tonnage, 49.2 per cent; tolls, 48.7 per cent; and tons of cargo carried, 50.5 per cent.

*Great Britain.*—Transits, 29.4 per cent; Panama Canal net tonnage, 29.4 per cent; tolls, 30 per cent; and tons of cargo carried, 27.8 per cent.

The number of nationalities represented is 33.

TABLE NO. 1.—General balance sheet, June 30, 1927

ASSETS		LIABILITIES	
Canal fixed property..(Table 15)...	\$236,674,901.07	Commercial capital investment....	\$273,273,818.51
Canal equipment.....(Table 16)...	4,504,489.78	National defense capital investment.....	113,122,892.83
Revenues due U. S. Treasury.....	235,862.73	Accounts payable.....(Table 13)...	1,632,376.04
Cash.....	1,306,599.66	Unclassified canal credits.....	75,666.90
Accounts receivable.....(Table 12)...	651,660.10	Amortization (unfunded).....	2,265,069.41
Business property.....(Table 17)...	31,363,145.81	Depreciation (unfunded).....	2,838,815.82
Stores.....(Table 21)...	3,970,192.65	Replacement reserves (funded)	
United States Treasury.....	88,727,138.59	.....(Table 29)...	3,023,792.39
National defense expenditures		Repair reserves (funded).....	
.....(Table 14)...	113,122,892.83	.....(Table 30)...	1,987,511.57
Undistributed business capital		Gratuity reserves (funded)	
(Credit account).....(Table 17)...	<sup>1</sup> 1,813,000.00	.....(Table 31)...	519,157.12
Total assets.....	478,743,883.22	Contingent reserves (funded).....	50,907.10
		Surplus.....(Table 27)...	79,953,875.53
		Total liabilities.....	478,743,883.22

<sup>1</sup> Denotes credit.



TABLE NO. 2.—*Summary of expenses and revenues*

	1926	1927
Transit operations:		
Canal transit expenses.....	\$10,339,091.43	\$11,232,493.85
Depreciation—Amortization fixed property.....	699,522.50	948,240.94
Gross canal transit expenses.....(Table 24)	11,038,613.93	12,180,734.79
Canal transit earnings <sup>1</sup> .....(Table 24)	3,045,145.46	3,183,019.77
Net canal transit expenses.....(Table 24)	7,993,468.47	8,997,715.02
Canal transit revenues <sup>2</sup> .....(Table 25)	23,145,136.53	24,608,808.82
Canal transit surplus.....(Table 27)	15,151,668.06	15,611,093.80
Fixed capital charge at 3 per cent <sup>3</sup> .....	7,348,293.04	7,309,248.28
Computed transit surplus.....	7,803,375.02	8,301,845.52
Business operations:		
Canal business revenues.....(Table 26)	15,874,478.01	15,878,654.57
Canal business expenses.....(Table 26)	15,033,167.72	15,002,117.77
Canal business surplus.....(Table 27)	841,310.29	876,536.80
Fixed capital charge at 3 per cent <sup>3</sup> .....(Table 26)	702,873.27	744,496.74
Computed business surplus.....	138,437.02	132,040.06
Combined operations:		
Panama Canal revenues.....	39,019,614.54	40,487,463.39
Panama Canal expenses.....	23,026,636.19	23,999,832.79
Panama Canal surplus.....(Table 27)	15,992,978.35	16,487,630.60
Fixed capital charge at 3 per cent <sup>3</sup> .....	8,051,166.31	8,053,745.02
Computed total surplus.....	7,941,812.04	8,433,885.58

<sup>1</sup> Canal transit earnings consist of sales and services which by law are repaid to appropriation for canal maintenance, and hence are deducted from appropriation expenditures.

<sup>2</sup> Canal transit revenues consist principally of tolls, and by law must be covered into the U. S. Treasury as miscellaneous receipts.

<sup>3</sup> No capital interest is charged against The Panama Canal by the U. S. Treasury, but for statistical comparison a theoretical capital interest charge at 3 per cent, the rate at which most of The Panama Canal bonds were sold is included in above table, based on an appraised commercial investment in The Panama Canal, amounting to between \$270,000,000 and \$275,000,000 according to fluctuating investments in working capital. The balance of construction cost of The Panama Canal, amounting to approximately \$113,000,000, is shown in Table 14, making the total construction cost of The Panama Canal, exclusive of the Military and Naval establishments, approximately \$385,000,000.





TABLE No. 4.—*Statement of appropriations by the Congress*

Net canal construction appropriations to June 30, 1927.....		\$386,910,301.00
Total appropriations.....	\$387,069,143.31	
Less amounts returned to surplus fund, United States Treasury, to June 30, 1927.....	158,842.31	
Panama Canal fund.....	\$130,852.65	
Canal connecting Atlantic and Pacific Oceans.....	27,989.66	
(For detail see annual report, 1924.)		
15 annual payments of \$250,000 each to the Republic of Panama, including act of Apr. 29, 1926, for payment due Feb. 26, 1927.....		3,750,000.00
Maintenance and operation (detailed below).....		96,907,326.90
Total appropriations.....		487,567,627.90

	Maintenance and operation	Sanitation, Canal Zone	Civil government, Panama Canal and Canal Zone	Increase of compensation, Panama Canal	Total
Act of—					
Mar. 3, 1915.....	\$5,200,000.00	\$700,000.00	\$540,000.00	-----	\$6,440,000.00
July 1, 1916.....	5,750,000.00	700,000.00	600,000.00	-----	7,050,000.00
June 3, 1917.....	9,000,000.00	700,000.00	700,000.00	-----	10,400,000.00
July 12, 1917.....	-----	-----	-----	\$10,006.22	10,006.22
June 4, 1918.....	-----	150,000.00	-----	-----	150,000.00
July 1, 1918.....	9,000,000.00	900,000.00	750,000.00	-----	10,650,000.00
July 3, 1918.....	-----	-----	-----	16,000.00	16,000.00
Mar. 1, 1919.....	-----	-----	-----	32,592.66	32,592.66
July 19, 1919.....	7,547,939.00	850,000.00	702,000.00	-----	9,099,939.00
Nov. 4, 1919.....	-----	-----	150,000.00	-----	150,000.00
May 29, 1920.....	-----	-----	-----	34,500.00	34,500.00
June 5, 1920.....	7,531,851.00	850,000.00	900,000.00	-----	9,281,851.00
Mar. 1, 1921.....	-----	-----	24,670.00	-----	24,670.00
Mar. 4, 1921.....	7,250,000.00	850,000.00	900,000.00	21,500.00	9,021,500.00
June 30, 1922.....	2,659,434.00	525,000.00	930,000.00	16,800.00	4,131,234.00
Mar. 2, 1923.....	5,079,683.00	575,000.00	930,000.00	17,520.00	6,602,203.00
June 7, 1924.....	5,748,160.00	580,000.00	912,000.00	-----	7,240,160.00
Dec. 6, 1924.....	103,050.00	6,266.00	79,670.00	-----	188,986.00
Feb. 12, 1925.....	7,140,000.00	653,216.00	942,150.00	-----	8,735,366.00
Apr. 15, 1926.....	5,986,094.00	670,000.00	999,980.00	-----	7,656,074.00
	77,996,211.00	8,709,482.00	10,060,470.00	148,918.88	96,915,081.88
Less amount transferred to surplus fund, United States Treasury.....	-----	-----	-----	7,754.98	7,754.98
Total.....	77,996,211.00	8,709,482.00	10,060,470.00	141,163.90	96,907,326.90
Appropriation for fiscal year 1928 (act of Feb. 23, 1927).....	5,830,000.00	670,000.00	1,100,000.00	-----	7,600,000.00
Act of Feb. 24, 1927, annual payment to the Republic of Panama due Feb. 26, 1928.....	-----	-----	-----	-----	250,000.00

## STATUS OF AUTHORIZED BOND ISSUE

Authorized bond issue.....		\$375,200,900.00
Appropriated for canal construction.....		\$386,910,301.00
Less amount exempted by law:		
Colliers Ulysses and Achilles.....	\$1,985,552.29	
Coal barges Mamei and Darien.....	2,295,746.57	
Dock No. 6, Cristobal.....	2,093,190.00	
Equipping colliers Ulysses and Achilles.....	250,000.00	
Painting tanks, colliers Ulysses and Achilles.....	44,279.76	
Repairs to steamships Ancon and Cristobal.....	720,000.00	
Expended for operation and maintenance of canal.....	4,289,159.00	
Stock of material and supplies for operation and maintenance of canal.....	2,225,000.00	
		13,902,927.62
		373,007,373.38
Balance.....		2,193,526.62
Appraised value, American legation building in the city of Panama, exempt from charge to bond issue, act July 1, 1916.....		22,256.00
Balance available for appropriation within limit of cost of canal and authorized bond issue.....		2,215,782.62

TABLE NO. 5.—*Cash receipts and disbursements for account of the United States, fiscal year ended June 30, 1927*

## CASH RECEIPTS

	United States Treasurer	Disbursing clerk, Washington, D. C.	Paymaster, Canal Zone	Collector, Canal Zone	Total
On hand July 1, 1926, by appropriations and funds:					
Maintenance and operation, Panama Canal.....	\$7, 128, 498. 34	\$189, 167. 53	\$1, 869, 404. 66	\$39, 599. 75	\$9, 226, 670. 28
Sanitation, Canal Zone, Panama Canal.....	209, 285. 54	8, 381. 67	112, 445. 40	9, 089. 78	339, 202. 39
Civil government, Panama Canal and Canal Zone.....	37, 754. 74	6, 670. 77	119, 186. 07	1, 146. 15	164, 757. 73
Increase of compensation, 1924.....	127. 36	-----	-----	-----	127. 36
Miscellaneous receipts, United States revenues.....	-----	-----	-----	193, 296. 68	193, 296. 68
Security deposits.....	-----	1, 567. 18	6, 952. 36	333, 547. 56	342, 067. 10
Total.....	7, 375, 665. 98	205, 787. 15	2, 107, 988. 49	576, 679. 92	10, 266, 121. 54
Appropriations for fiscal year 1927:					
Maintenance and operation, Panama Canal.....	5, 986, 094. 00	-----	-----	-----	5, 986, 094. 00
Sanitation, Canal Zone, Panama Canal.....	670, 000. 00	-----	-----	-----	670, 000. 00
Civil government, Panama Canal and Canal Zone.....	999, 980. 00	-----	-----	-----	999, 980. 00
Total.....	7, 656, 074. 00	-----	-----	-----	7, 656, 074. 00
Transfers between fiscal officers:					
Maintenance and operation, Panama Canal.....	211, 141. 08	4, 570, 000. 00	9, 599, 583. 17	-----	14, 380, 724. 25
Sanitation, Canal Zone, Panama Canal.....	27, 760. 22	130, 000. 00	1, 053, 724. 30	-----	1, 211, 484. 52
Civil government, Panama Canal and Canal Zone.....	9, 657. 00	30, 000. 00	880, 683. 69	-----	920, 340. 69
Total.....	248, 558. 30	4, 730, 000. 00	11, 533, 991. 16	-----	16, 512, 549. 46
Collections:					
Maintenance and operation, Sanitation, Canal Zone, Panama Canal.....	250, 746. 69	197, 777. 33	38. 95	8, 524, 303. 93	8, 972, 866. 90
Civil government, Panama Canal and Canal Zone.....	43, 333. 33	26, 790. 22	-----	646, 511. 35	716, 634. 90
Miscellaneous receipts, United States revenues.....	-----	7, 157. 00	-----	58, 635. 05	65, 792. 05
Security deposits.....	-----	167, 970. 28	14. 13	24, 572, 051. 61	24, 740, 036. 02
-----	-----	407, 501. 92	3, 556, 487. 71	31, 562, 669. 04	35, 526, 658. 67
Total.....	294, 080. 02	807, 196. 75	3, 556, 540. 79	65, 364, 170. 98	70, 021, 988. 54
Total cash debits.....	15, 574, 378. 30	5, 742, 983. 90	17, 198, 520. 44	65, 940, 850. 90	104, 456, 733. 54

TABLE No. 5.—*Cash receipts and disbursements for account of the United States, fiscal year ended June 30, 1927*—Continued

## CASH DISBURSEMENTS

	United States Treasurer	Disbursing clerk, Washington, D. C.	Paymaster, Canal Zone	Collector, Canal Zone	Total
Covered into United States Treasury:					
Maintenance and operation (business profits, 1926)	\$785, 238. 42	-----	-----	-----	\$785, 238. 42
Increase compensation, 1924	127. 36	-----	-----	-----	127. 36
Miscellaneous receipts	-----	-----	\$14. 13	\$24, 591, 478. 08	24, 591, 492. 21
Total	785, 365. 78	-----	14. 13	24, 591, 478. 08	25, 376, 857. 99
Transfers between fiscal officers:					
Maintenance and operation, Panama Canal	5, 720, 000. 00	\$200, 973. 91	-----	8, 459, 750. 34	14, 380, 724. 25
Sanitation, Canal Zone, Panama Canal	530, 000. 00	27, 603. 72	-----	653, 874. 80	1, 211, 484. 52
Civil government, Panama Canal and Canal Zone	852, 000. 00	9, 657. 00	-----	58, 683. 69	920, 340. 69
Total	7, 102, 000. 00	238, 240. 63	-----	9, 172, 308. 83	16, 512, 549. 46
Disbursements:					
Maintenance and operation, Panama Canal	5, 701. 75	4, 508, 864. 70	10, 664, 037. 53	-----	15, 178, 603. 98
Sanitation, Canal Zone, Panama Canal	161, 522. 84	123, 242. 93	1, 079, 422. 88	-----	1, 364, 188. 65
Civil government, Panama Canal and Canal Zone	90, 394. 71	30, 487. 74	957, 091. 57	-----	1, 077, 974. 32
Miscellaneous receipts, United States revenues	-----	167, 970. 28	-----	-----	167, 970. 28
Security deposits	-----	407, 044. 82	3, 529, 548. 02	31, 428, 877. 59	35, 365, 470. 43
Total	257, 619. 30	5, 237, 610. 47	16, 230, 100. 30	31, 428, 877. 59	53, 154, 207. 66
On hand June 30, 1927:					
Maintenance and operation, Panama Canal	7, 065, 539. 94	247, 106. 25	804, 989. 25	104, 153. 34	8, 221, 788. 78
Sanitation, Canal Zone, Panama Canal	258, 856. 25	14, 319. 24	86, 746. 82	1, 726. 33	361, 648. 64
Civil government, Panama Canal and Canal Zone	104, 997. 03	3, 683. 03	42, 777. 89	1, 097. 51	152, 555. 46
Miscellaneous receipts, United States revenues	-----	-----	-----	173, 870. 21	173, 870. 21
Security deposits	-----	2, 024. 28	33, 892. 05	467, 339. 01	503, 255. 34
Total	7, 429, 393. 22	267, 132. 80	968, 406. 01	748, 186. 40	9, 413, 118. 43
Total cash credits	15, 574, 378. 30	5, 742, 983. 90	17, 198, 520. 44	65, 940, 850. 90	104, 456, 733. 54



TABLE No. 6.—*Payments made by paymaster, fiscal year ended June 30, 1927*

	Panama Canal payments				Panama Railroad payments			
	Gold rolls	Silver rolls	Vouchers	Total	Pay rolls	Vouchers	Total	Grand total
<b>1926</b>								
July.....	\$574,928.54	\$360,249.74	\$104,018.69	\$1,039,196.97	\$273,646.02	\$514,631.10	\$818,277.72	\$1,857,474.69
August.....	532,362.61	354,775.32	86,896.22	974,034.15	228,891.59	343,451.64	572,343.23	1,546,377.38
September.....	553,167.62	352,984.84	102,264.08	1,008,416.54	263,510.59	368,616.09	632,126.68	1,640,543.22
October.....	577,781.51	353,284.87	146,916.13	1,077,982.51	271,311.82	371,828.38	643,140.20	1,721,122.71
November.....	579,439.04	357,999.28	112,254.70	1,049,693.02	237,171.39	382,916.64	620,088.03	1,669,781.05
December.....	578,111.18	348,092.83	98,942.45	1,025,146.46	259,375.38	448,750.95	708,126.33	1,733,272.79
<b>1927</b>								
January.....	581,773.00	363,472.81	120,419.24	1,065,665.05	275,552.15	398,704.61	674,256.76	1,739,921.81
February.....	592,509.76	381,752.53	126,238.95	1,100,501.24	261,846.93	350,218.18	612,065.11	1,712,566.35
March.....	586,354.38	383,134.26	10,812.60	980,301.24	299,074.11	430,855.30	689,929.41	1,670,230.65
April.....	600,800.24	417,292.78	216,940.60	1,235,033.62	272,163.04	371,491.39	643,654.43	1,878,688.05
May.....	574,296.56	381,935.89	116,873.93	1,073,106.38	262,903.63	398,086.97	660,990.60	1,734,096.93
June.....	585,802.86	379,615.34	106,056.90	1,071,473.10	258,307.46	471,587.42	729,894.88	1,801,369.98
Total.....	6,917,327.30	4,434,590.49	1,348,634.49	12,700,552.28	3,123,754.71	4,881,138.67	8,004,893.38	20,705,445.66

TABLE NO. 7.—*Receipts and disbursements by collector, Canal Zone funds, fiscal year ended June 30, 1927*

RECEIPTS						
Month	Clubhouse funds	Trust funds	Postal-savings funds	Money-order funds	Interest	Total
1926						
July.....	\$28,914.96	\$5,758.18	-----	\$101,889.75	\$1,104.73	\$137,667.62
August.....	29,372.23	81.44	-----	118,251.12	2,631.89	150,336.68
September.....	26,609.66	70.35	-----	116,952.87	1,103.97	144,736.85
October.....	27,840.77	1,379.82	-----	141,924.55	4,976.05	176,121.19
November.....	28,226.45	3,031.28	-----	172,040.14	1,154.43	204,452.30
December.....	27,405.70	74.18	-----	144,586.71	1,119.61	173,186.20
1927						
January.....	30,829.47	2,586.68	-----	134,594.42	2,660.05	170,670.62
February.....	30,394.72	1,606.86	-----	164,654.79	1,187.39	197,843.76
March.....	33,518.66	69.53	-----	189,533.01	995.04	224,116.24
April.....	33,767.01	898.54	-----	128,111.86	5,064.53	167,841.94
May.....	27,381.91	2,464.43	-----	120,220.27	1,065.27	151,131.88
June.....	27,982.61	1,267.98	-----	115,510.04	1,038.57	145,799.20
Total receipts.....	352,244.15	19,289.27	-----	1,648,269.53	24,101.53	2,043,904.48
Cash on hand July 1, 1926.....	147,354.47	7,668.75	\$181.00	779,472.61	6,009.39	940,686.22
	499,598.62	26,958.02	181.00	2,427,742.14	30,110.92	2,984,590.70

DISBURSEMENTS						
1926						
July.....	\$31,468.74	\$5,921.50	-----	\$130,500.00	\$1,262.98	\$169,153.22
August.....	62,686.87	32.62	-----	106,980.02	657.58	170,357.09
September.....	20,018.81	191.00	-----	127,300.00	1,199.12	148,708.93
October.....	37,373.54	239.94	-----	131,400.00	901.18	169,914.66
November.....	28,457.63	3,387.87	-----	142,030.33	1,135.79	175,011.62
December.....	21,906.81	862.25	-----	155,200.00	809.17	178,778.23
1927						
January.....	32,697.69	90.03	-----	175,809.00	621.17	209,217.89
February.....	29,334.09	126.52	-----	164,500.00	684.25	196,644.86
March.....	34,504.65	150.00	-----	142,946.15	1,254.37	178,855.17
April.....	26,360.10	854.92	-----	192,500.00	1,196.94	220,911.96
May.....	34,208.24	3,666.23	-----	162,500.00	879.42	201,253.89
June.....	35,746.31	161.08	-----	139,345.75	11,530.99	186,784.13
Total disbursements.....	394,763.48	17,683.96	-----	1,771,011.25	22,132.96	2,205,591.65
Cash on hand June 30, 1927.....	104,835.14	9,274.06	\$181.00	656,730.89	7,977.96	778,999.05
	499,598.62	26,958.02	181.00	2,427,742.14	30,110.92	2,984,590.70

TABLE NO. 8.—*Statement of collections repaid to appropriations and to individuals and companies and collections deposited to miscellaneous receipts during fiscal year ended June 30, 1927*

MAINTENANCE AND OPERATION, PANAMA CANAL		Collections credited to earnings—Con.	
Collections credited to earnings:		District quartermaster, Pedro Miguel, services.....	\$12,308.27
Executive office services.....	\$57,990.58	District quartermaster, Gatun, services.....	6,815.96
Cables and radiograms.....	339.45	District quartermaster, Cristobal, services.....	3,252.40
Sales of Canal Record.....	22.50	Port captain, Balboa, services.....	1,466.14
Clubs and playground services.....	77,927.50	Port captain, Cristobal, services.....	10.00
Accounting office services.....	159,622.01	Admeasurement of vessels.....	4,095.00
Lost metal checks.....	490.50	Inspection of vessels.....	1,961.10
Paymaster's office services.....	16,200.00	Pilotage, Balboa.....	96,980.00
Collector's office services.....	21,665.00	Pilotage, Cristobal.....	225,206.00
Safety deposit box rentals.....	537.00	Tug and launch service, Balboa.....	223,992.63
Chief of office, Washington office, services.....	275.90	Tug and launch service, Cristobal.....	241,060.80
Purchasing bureau, Washington office, services.....	327.69	Handling lines, Balboa.....	122,120.25
Office engineer services.....	8,655.54	Handling lines, Cristobal.....	133,346.00
Sales of prints.....	3,538.24	Aids to navigation.....	7,240.39
Meteorology and hydrography division services.....	3.75	Gatun Locks, services.....	67.76
Survey section services.....	2,834.20	Pedro Miguel Locks, services.....	12.76
Balboa storehouse services.....	1,492.55	Gatun Dam, services.....	777.94
Administration building storehouse services.....	30.46	Dredging division, services.....	15,370.22
Cristobal storehouse services.....	136.71	Reserve for depreciation reserve equipment.....	10.50
Supply department office services.....	9,320.50	Depreciation for rented buildings.....	43.58
District quartermaster, Balboa, services.....	12,257.51	Electric current.....	318,148.16
		Electric work.....	87,053.52
		Telephone and telegraph work.....	184,012.15

TABLE No. 8.—Statement of collections repaid to appropriations and to individuals and companies and collections deposited to miscellaneous receipts during fiscal year ended June 30, 1927—Continued

Collections credited to earnings—Con.		Collections credited to expenses—Con.	
Sale of water	\$258, 523.38	General accounts	\$46, 814.37
Municipal engineering work	198, 706.72	Recruiting and repatriating employees	720.25
Water rentals, Panama	143, 611.28		
Water rentals, Colon	95, 964.78	Total, maintenance and operation	8, 524, 303.93
Shop work	1, 707, 571.68	SANITATION, CANAL ZONE, PANAMA CANAL	
Dry dockage, Balboa	49, 872.78	Deduction certificates for medical services	\$21, 943.71
Dry dockage, Cristobal	18, 620.01	Chief health office	48.00
Dockage and wharfage	106, 339.46	Ancon Hospital fees	250, 647.82
Handling fuel oil	588, 377.67	Ancon Hospital mess	17, 730.82
Fuel-oil sales	44, 748.99	Ancon Hospital burials	8, 244.53
Fuel-oil-tank rentals	12, 047.25	Ancon Hospital miscellaneous	5, 139.80
Business store sales	1, 147, 678.66	Colon Hospital fees	35, 477.37
Animal and motor transportation	122, 126.55	Colon Hospital mess	3, 973.82
Motor-car repair-shop work	34, 931.35	Colon Hospital burials	956.32
Building repairs and construction	399, 303.86	Line dispensaries	17, 938.68
Panama Canal Press, services	113, 103.08	Corozal Farm produce	30, 857.82
Gold quarters rentals	392, 942.49	Corozal Farm pasturage	161.85
Silver quarters rentals	193, 610.39	Corozal Asylum fees	100, 826.24
Garage rentals	36, 285.78	Corozal Asylum miscellaneous	3, 839.06
Boathouse rentals	374.40	Palo Seco leper asylum	20, 109.25
Restaurant rentals	10, 295.00	Quarantine subsistence	10, 473.01
Building and building-site rentals	17, 812.40	Quarantine miscellaneous	16, 914.63
Market rentals	2, 328.53	Sanitation, Panama	5, 137.32
Sales of fuel	3, 741.25	Street cleaning and garbage collection, Panama	37, 126.29
Sales of gasoline	89, 809.54	Sanitation, Colon	1, 432.04
Sales of general supplies	9, 783.10	Street cleaning and garbage collection, Colon	36, 950.78
Exchange of furniture	8, 305.63	Sanitation, Canal Zone	19, 741.98
Exchange of mattresses	1, 761.80	Refunds	840.21
Mattress factory sales	27, 287.25	Total, sanitation	646, 511.35
Janitor service	26, 674.35	CIVIL GOVERNMENT, PANAMA CANAL AND CANAL ZONE	
Crank case service	100.50	Civil affairs	\$6.00
Hotel Tivoli	223, 292.26	Customs	345.00
Land rentals	46, 209.40	Postal service	4, 842.80
Salvage section services	65, 812.19	School tuition	8, 616.92
Sales of sand and gravel	20, 325.40	Sale of school books	551.88
Sales of nautical charts and publications	2, 248.20	Sale of school materials	582.68
Fortifications division	164, 330.52	Fire protection	67.35
Collections credited to expenses:		Police and prisons	43, 213.25
Ahajuela Dam	3, 581.40	District court	56.95
Injury compensation	7.76	Refunds	352.22
Commissary coupons honored by The Panama Canal	2, 882.05	Total, civil government	58, 635.05
Electric light and power system	.95	MISCELLANEOUS RECEIPTS	
Electric work	1.37	Public works, Panama, amortization and interest	\$82, 732.22
Telephone and telegraph work	28.65	Public works, Colon, amortization and interest	46, 642.42
Municipal engineering work	94.15	Tolls	24, 230, 009.13
Shops and dry docks	31.84	Taxes, fees, fines, Canal Zone	67, 356.25
Animal and motor transportation	9.32	Postal receipts	146, 099.74
Building repairs and construction	51.68	Interest on bank balances	10, 000.00
Gold quarters	135.72	Miscellaneous	183.10
Silver quarters	25.00	Total, miscellaneous receipts	24, 583, 022.86
Garages	7.08	INDIVIDUALS AND COMPANIES	
Boathouses	17.96	Panama Railroad Co.	\$172.73
District quartermaster supplies	113.02	Various persons	73.07
Hotel Tivoli	56.55	Total, individuals and companies	245.80
Salvage section	101.76		
Fortifications division	350.29		
Claims against carriers and contractors	13.57		
Sale of obsolete property	1, 309.00		
Legal services	68.00		
Balboa store	578.49		
District quartermaster, Balboa	.08		
Port captain, Balboa	2, 043.71		
Port captain, Cristobal	2, 067.29		
Lighthouse subdivision	370.95		
Gatun Dam	1, 121.97		
Pedro Miguel Locks	64.00		
Dredging division	17, 758.40		
RECAPITULATION			
Maintenance and operation, Panama Canal			\$8, 524, 303.93
Sanitation, Canal Zone, Panama Canal			646, 511.35
Civil government, Panama Canal and Canal Zone			58, 635.05
Total repaid to appropriations			9, 229, 450.33
Miscellaneous receipts			24, 583, 022.86
Individuals and companies			245.80
Grand total			33, 812, 718.99

TABLE NO. 9.—*Statement of collections in the collector's special deposit account during the fiscal year ended June 30, 1927*

## IN THE UNITED STATES

Month	Deposits	Panama Canal bills applied	Payments to individuals and companies	Refunds
1926				
July.....	\$93,492.91	\$92,142.86	\$1,003.66	\$418.29
August.....	63,642.21	72,587.40	1,373.34	137.70
September.....	29,902.15	25,928.73	159.63	-----
October.....	22,454.75	32,732.88	797.37	569.73
November.....	30,283.89	22,814.85	64.71	462.39
December.....	38,448.69	39,192.01	356.08	730.05
1927				
January.....	29,890.88	29,832.48	101.71	799.49
February.....	5,624.25	6,986.40	490.35	-----
March.....	6,000.00	11,126.53	423.90	63.82
April.....	-----	-----	-----	-----
May.....	2,000.00	1,514.95	414.72	70.33
June.....	20,843.65	3,076.20	-----	10,971.25
Total.....	342,583.38	337,935.29	5,185.47	14,223.05

## ON THE ISTHMUS

1926				
July.....	\$2,487,143.49	\$2,055,554.82	\$394,071.35	\$22,125.10
August.....	2,479,161.48	2,152,122.16	387,333.27	1,571.13
September.....	2,529,272.75	2,161,380.82	346,018.89	1,598.19
October.....	2,480,471.70	2,185,848.21	376,448.94	2,417.27
November.....	2,533,974.40	2,028,525.41	449,178.75	1,230.68
December.....	2,608,454.10	2,130,970.76	391,342.29	9,115.29
1927				
January.....	2,446,158.97	2,130,614.37	402,734.23	4,150.70
February.....	2,823,736.84	2,291,442.09	472,205.76	35,255.65
March.....	2,852,562.99	2,419,324.61	435,803.38	5,779.76
April.....	2,710,900.45	2,283,627.85	351,121.12	4,680.27
May.....	2,563,041.91	2,261,071.71	342,819.82	3,598.87
June.....	2,705,206.58	2,208,464.31	319,378.08	2,607.87
Total.....	31,220,085.66	26,308,947.12	4,668,455.88	94,130.78

## RECAPITULATION

	In the United States		On the Isthmus	
On hand July 1, 1926.....	\$21,556.63		\$311,990.93	
Deposits during year.....	342,583.38		31,220,085.66	
Panama Canal bills applied.....		\$337,935.29		\$26,308,947.12
Payments to individuals and companies.....		5,185.47		4,668,455.88
Refunds.....		14,223.05		94,130.78
On hand June 30, 1927.....		6,796.20		460,542.81
Total.....	364,140.01	364,140.01	31,532,076.59	31,532,076.59



TABLE NO. 10.—Statement of audited pay rolls on Isthmus during fiscal year 1927

	Total	Gold rolls	Silver rolls
Maintenance and operation:			
Canal transit divisions—			
Executive department—			
Executive.....	\$22,908.55	\$22,908.55	-----
Record.....	84,441.01	63,505.99	\$20,935.02
Personnel.....	41,345.24	41,345.24	-----
Correspondence.....	47,129.10	45,408.32	1,720.78
Property.....	32,308.42	32,308.42	-----
Statistics.....	22,590.96	22,590.96	-----
General.....	40,017.44	39,096.48	920.96
Shipping commissioner.....	33,836.99	32,570.90	1,266.09
Total, executive department.....	324,577.71	299,734.86	24,842.85
Clubs and playgrounds.....	152,435.49	75,012.21	77,423.28
Accounting department—			
Accounting.....	396,632.04	392,713.92	3,918.12
Paymaster.....	39,205.03	36,115.03	3,090.00
Collector.....	47,093.13	47,093.13	-----
Total accounting department.....	482,930.20	475,922.08	7,008.12
Office engineer.....	64,954.51	63,091.12	1,863.39
Meteorology and hydrography.....	28,488.25	20,796.07	7,692.18
Surveys.....	35,078.89	20,822.12	14,256.77
Supply department, quartermaster—			
Office.....	45,199.73	44,271.02	928.71
District quartermasters.....	233,155.69	52,409.11	180,746.58
Storehouses.....	260,840.64	105,191.24	155,649.40
Total, quartermaster.....	539,196.06	201,871.37	337,324.69
Marine division—			
Superintendent's office.....	11,216.19	11,216.19	-----
Port captain—			
Balboa.....	542,821.42	282,589.37	260,232.05
Cristobal.....	475,298.72	270,045.90	205,252.82
Lighthouse subdivision.....	108,659.87	53,193.68	55,466.19
Total, marine division.....	1,137,996.20	617,045.14	520,951.06
Lock operation—			
Atlantic.....	570,753.21	330,679.37	240,073.84
Pacific.....	655,573.74	416,747.59	238,826.15
Total, lock operation.....	1,226,326.95	747,426.96	478,899.99
Gatun Dam and backfill.....	39,296.50	9,041.74	30,254.76
Dredging division.....	1,195,824.89	582,562.04	613,262.85
Total, transit divisions.....	5,227,105.65	3,113,325.71	2,113,779.94
Canal business divisions—			
Electrical.....	581,037.25	465,693.25	115,344.00
Municipal engineering.....	625,850.03	235,500.02	390,350.01
Mechanical division—			
Balboa shops.....	1,376,862.31	1,005,691.57	371,170.74
Cristobal shops.....	360,178.47	234,296.22	125,882.25
Total, mechanical division.....	1,737,040.78	1,239,987.79	497,052.99
Supply department, quartermaster—			
Fuel oil plants.....	133,407.73	91,050.19	42,357.54
Animal and motor transportation.....	165,206.32	64,416.68	100,789.64
Motor car repair shop.....	87,589.68	55,899.48	31,690.20
Building repairs and construction.....	743,986.10	238,959.13	505,026.97
Panama Canal Press.....	81,613.25	29,003.54	52,609.71
Farin bureau.....	15,349.16	7,158.82	8,190.34
Hotel Tivoli.....	59,788.97	15,694.19	44,094.78
Total, quartermaster.....	1,286,941.21	502,182.03	784,759.18
Fortifications.....	92,310.95	38,826.14	53,484.81
Marine salvage section.....	49,639.30	23,708.03	25,931.27
Total, business divisions.....	4,372,819.52	2,505,897.26	1,866,922.26
Injury and death (act Sept. 7, 1916).....	42,300.17	42,300.17	-----
Total, maintenance and operation.....	9,642,225.34	5,661,523.14	3,980,702.20

TABLE NO. 10.—*Statement of audited pay rolls on Isthmus during fiscal year 1927—*  
Continued

	Total	Gold rolls	Silver rolls
Civil government:			
Civil affairs and customs.....	\$38,638.24	\$37,765.74	\$872.50
Posts.....	123,577.28	108,815.19	14,762.09
Schools.....	216,957.81	184,688.63	32,269.18
Fire protection.....	110,018.99	110,018.99	
Police and prisons.....	349,599.28	314,765.38	34,833.90
District court.....	21,761.73	20,104.73	1,657.00
District attorney.....	11,594.21	11,594.21	
Marshal.....	8,331.11	8,331.11	
Magistrates' courts.....	14,305.17	12,404.84	1,900.33
Total, civil government.....	894,783.82	808,488.82	86,295.00
Sanitation:			
Office.....	17,148.51	17,148.51	
Ancon Hospital.....	347,415.92	245,238.60	102,177.32
Colon Hospital.....	52,313.06	35,873.83	16,439.23
Line dispensaries.....	42,210.88	35,726.49	6,484.39
Corozal Farm.....	17,319.52	4,320.84	12,998.68
Corozal Hospital.....	54,797.34	29,448.43	25,348.91
Palo Seco leper colony.....	20,666.57	4,927.74	15,738.83
Quarantine—			
Office.....	274.62	274.62	
Balboa.....	27,321.54	19,612.63	7,708.91
Cristobal.....	23,516.00	18,333.15	5,182.85
Total, quarantine.....	51,112.16	38,220.40	12,891.76
Health office—			
Panama.....	102,913.09	32,382.00	70,531.09
Colon.....	65,841.95	26,675.54	39,166.41
Sanitation, Zone.....	103,713.14	13,591.49	90,121.65
Total, sanitation.....	875,452.14	483,553.87	391,898.27
Grand total.....	11,412,461.30	6,953,565.83	4,458,895.47

TABLE NO. 11.—*Statement of accounts receivable registered during fiscal year ended*  
*June 30, 1927*

Month	Number of bills registered	Total	Against the Panama R. R.	Against other departments of the United States	Commercial	Miscellaneous receipts	Tolls	Repay to appropriations
1926								
July.....	3,062	\$2,553,246.08	\$171,935.64	\$104,921.11	\$295,537.26	\$100.00	\$1,980,752.07	\$572,394.01
August.....	3,212	2,593,568.55	179,116.41	117,924.66	241,357.70	100.00	2,055,069.78	538,398.77
September.....	3,358	2,598,117.13	173,738.67	124,897.18	279,707.46	100.00	2,019,673.82	578,343.31
October.....	3,420	2,606,780.53	167,514.28	136,656.40	313,171.36	100.00	1,989,338.49	617,342.04
November.....	3,231	2,460,024.86	178,910.27	101,944.22	289,966.78	100.00	1,889,103.59	570,821.27
December.....	3,387	2,635,199.42	182,366.34	142,209.75	314,353.21	105.00	1,996,165.12	638,929.30
1927								
January.....	3,608	2,799,663.02	200,082.36	137,193.41	477,448.09	100.00	1,984,839.16	\$14,723.86
February.....	3,404	2,759,376.38	248,704.62	118,325.04	397,243.49	100.00	1,995,003.23	764,273.15
March.....	3,755	2,880,100.64	224,434.80	110,063.25	327,432.00	100.00	2,218,070.59	661,930.05
April.....	3,452	2,693,478.42	234,277.22	88,453.74	305,321.25	100.00	2,065,326.21	628,052.21
May.....	3,517	2,775,148.71	302,769.31	95,077.77	310,992.37	100.00	2,066,209.26	708,839.45
June.....	3,603	2,690,286.50	254,088.06	117,731.09	347,853.38	100.00	1,970,513.97	719,672.53
Total.....	41,009	32,044,990.24	2,517,937.98	1,395,397.62	3,900,384.35	1,205.00	24,230,065.29	7,813,719.95
Total for year ended June 30, 1926.....	37,425	31,033,890.68	2,594,448.23	1,748,810.61	3,757,342.77	1,309.29	22,931,979.78	8,100,601.61

TABLE NO. 12.—*Comparative statement of accounts receivable*

	Fiscal year 1926	Fiscal year 1927
Audited bills.....	\$684,425.39	\$617,347.07
Hospital certificates.....	26,267.97	24,694.12
Injury compensation.....	4,958.81	9,555.97
Cement bags returned to contractor.....	9,803.30	1 23.86
Water rental deficit bills 2.....	70,301.63	-----
Commissary coupon books.....	168.94	86.80
Total.....	795,926.04	651,660.10

<sup>1</sup> Credit<sup>2</sup> Transferred to "Revenue due U. S. Treasury."TABLE NO. 13.—*Comparative statement of accounts payable*

	Fiscal year 1926	Fiscal year 1927
United States invoices.....	\$411,545.38	\$506,948.03
Isthmus vouchers.....	112,892.19	121,057.48
Current pay rolls.....	923,796.19	974,280.09
Unpaid salaries and wages.....	67,661.54	21,320.58
Drums, carboys, and reels.....	5,475.60	6,944.30
Local purchases.....	743.20	2,725.56
Total.....	1,522,114.10	1,632,376.04

TABLE NO. 14.—*Defense capital expenditures to June 30, 1927*

Prism excavation:		Sanitary ditches.....	\$199,706.53
Gatun to sea.....	\$237,482.88	Playgrounds.....	13,902.41
Gatun to Pedro Miguel.....	2,141,358.67	Administration building, Balboa	
Pedro Miguel to sea.....	388,049.34	Heights.....	306,211.51
Gatun Locks.....	1,203,953.05	District court and law department	
Pedro Miguel Locks.....	638,599.30	office, Ancon.....	65,446.39
Miraflores Locks.....	867,655.23	Shops and store office.....	238,553.94
Protective fence, locks.....	60,160.23	Terminal office building, Balboa.....	3,225.42
Armor plate for spillway protection.	36,530.48	Shops:	
Gatun spillway.....	99,317.86	Balboa.....	3,795,260.32
Miraflores Spillway and East Dam.....	89,133.95	Cristobal.....	164,147.93
Gatun-Mindi Levee.....	2,813.01	Storehouses.....	475,934.74
Gatun Dam.....	196,462.60	Hotel and mess halls.....	242,909.87
Trinidad River Dam.....	1,328.47	Quarters:	
Pedro Miguel Dam.....	8,633.66	Gold.....	1,351,269.07
Miraflores West Dam.....	23,195.78	Silver.....	269,685.74
La Boca Locks and Dams (abandoned)	748,054.48	Miscellaneous buildings.....	510,891.18
Colon East Breakwater.....	3,771,111.74	Ancon Hospital.....	435,325.80
Colon West Breakwater.....	85,506.42	Colon Hospital.....	63,576.90
Naos Island Breakwater.....	20,312.78	Dispensaries.....	40,303.97
Aids to navigation.....	93,388.54	Asylums.....	128,506.16
Purchase, Toro Point Light.....	15,000.00	Quarantine stations.....	40,129.48
Floating caisson.....	20,872.15	Storehouse, health.....	2,547.15
Power transmission system.....	10,055.46	Balboa Incinerator.....	180,106.23
Coalging station:		Miscellaneous buildings, health.....	82,527.81
Balboa.....	2,284,568.35	Schoolhouses.....	49,227.23
Cristobal.....	3,179,797.59	Post offices.....	26,987.62
Dry docks:		Courthouses, police and fire stations, etc.....	50,963.50
Balboa.....	3,376,647.49	Canal construction and flooded areas.....	991,707.06
Cristobal.....	23,475.51	Auxiliary works and buildings.....	146,258.94
Docks, piers, and wharves:		Depopulation of Canal Zone.....	2,345,009.63
Balboa.....	1,590,160.35	Joint land commission expenses.....	356,006.61
Cristobal.....	1,033,984.61	Purchase from New Panama Canal Co.....	38,717,335.97
Entrance basin, Balboa.....	489,480.39	Investment Panama Railroad stock.....	155,818.24
Inner harbor:		Concession from Republic of Panama.....	10,000,000.00
Balboa.....	3,265,207.04	Relocation of Panama Railroad.....	9,800,626.46
Cristobal.....	237,101.43	Presentation of launch Louise to French Government.....	13,500.00
Preparatory work, Balboa terminals.....	1,808,921.65	Canal Protection 1917-18.....	25,236.79
Panama water-supply system.....	40,697.58	Equipment and property transferred to and from other departments of Government.....	1,970,877.33
Other Zone water-supply systems.....	155,190.03	Construction equipment.....	3,420,060.65
Zone sewage system.....	298,284.69	Construction material and supplies.....	2,225,000.00
Zone roadways.....	610,956.00	Loans to Panama Railroad Co.....	3,247,332.11
Fluviographs.....	3,427.02	Total.....	113,122,892.53
Permanent town site:			
Ancon-Balboa.....	596,596.73		
La Boca.....	123,206.13		
Red Tank.....	2,614.43		
Pedro Miguel.....	96,797.08		
Gatun.....	1,776.56		
Cristobal.....	355,847.29		
Sanitary fills.....	636,732.11		

TABLE NO. 15.—*Details of canal fixed property, fiscal year 1927*

	Balance July 1, 1926	Additions	Balance June 30, 1927
Channels:			
Cristobal to Gatun	\$11,636,700.00		\$11,636,700.00
Gatun to Pedro Miguel	104,926,542.00		104,926,542.00
Pedro Miguel to Balboa	18,032,612.00		18,032,612.00
Locks:			
Gatun	34,904,667.26		
Towing locomotive		\$43,957.75	34,948,625.01
Pedro Miguel	15,389,503.80		15,389,503.80
Miraflores	22,700,854.17		
Towing locomotive		43,957.75	22,744,811.92
Spillways:			
Gatun	3,982,199.00		3,982,199.00
Miraflores	1,231,256.00		1,231,256.00
Floating caisson	326,996.00		326,996.00
Dams:			
Gatun	9,626,678.00		9,626,678.00
Gatun-Mindi Levee	137,822.00		137,822.00
Trinidad River	65,057.00		65,057.00
Pedro Miguel	423,070.00		423,070.00
Miraflores	1,136,594.00		1,136,594.00
Alhajuela	238,970.65	4,615.19	243,585.84
Breakwaters:			
Colon-West	4,189,810.00		4,189,810.00
Naos Island	995,337.00		995,337.00
Aids to navigation	873,829.77		873,829.77
Roads, streets, and sidewalks	1,024,006.57	36,311.79	1,060,318.36
Storm sewers	206,786.31	1,374.82	208,161.13
Street lighting system	99,236.44	3,684.57	102,921.01
General buildings:			
Office buildings	996,045.00		
Administration, Cristobal		53,001.66	1,049,046.66
Telephone building, Cristobal	35,600.00		35,600.00
Storehouses	300,000.00		
Miraflores storehouse		100,000.00	
Powder magazine, Corozal		<sup>1</sup> 23,650.53	423,650.53
Weather and hydrographic structures	12,872.00		12,872.00
Health department buildings:			
Ancon Hospital	1,305,975.00		1,305,975.00
Colon Hospital	191,630.00		191,630.00
Dispensaries	120,910.00		120,910.00
Asylums	128,471.49		
Female ward, Corozal		134,760.04	
Mess hall, Corozal		88,003.26	
Infirmary, Palo Seco		<sup>1</sup> 9,894.70	361,129.49
Quarantine stations	40,129.00		40,129.00
Other health department buildings	58,507.00		58,507.00
Cristobal incinerator	88,474.55		88,474.55
Civil government buildings:			
Schoolhouses	443,044.00		443,044.00
Post offices	8,995.00		8,995.00
Fire stations	21,644.00		21,644.00
Police stations and prisons	19,870.00		19,870.00
Courthouses	74,896.00		74,896.00
Clubs and playgrounds	114,498.00		
Transferred from gold quarters—			
House 806, Cristobal		10,800.00	
House 453, Ancon		5,800.00	131,098.00
Total	236,115,089.01	559,812.06	236,674,901.07

<sup>1</sup> Adjustment prior years.



TABLE NO. 16.—*Detail of canal transit equipment*

	July 1, 1926	Additions	With- drawals	June 30, 1927
Floating equipment:				
Tugs.....	\$795,013.73			
Coco Solo, sold.....			\$14,398.70	
Coco Solo II, built.....		\$37,500.00		\$818,115.03
Supply boats.....	51,544.48			51,544.48
Launches.....	208,028.02			
Dolphin, built.....		15,726.24		
Pelican, purchased.....		10,528.57		
Aspinwall, improvements.....		5,809.04		
Taboga, improvements.....		6,581.48		
Patrol, sold.....			7,343.26	
Search, sold.....			6,630.00	232,700.09
Dredges.....	1,186,516.60			1,186,516.60
Barges.....	965,951.23			
No. 36, renewals.....		1,400.00		
No. 39, renewals.....		2,100.00		
No. 99, built.....		14,432.33		
3 new steel barges, adjustment.....		<sup>1</sup> 314,250.00		
No. 117, sold.....			7,313.80	
No. 121, sold.....			7,776.00	
No. 187, surveyed.....			300.00	1,282,743.76
Floating cranes.....	659,524.29			659,524.29
Crane boat.....	30,000.00			30,000.00
Graders.....	28,690.30			28,690.30
Drill barges.....	110,000.00			110,000.00
Compressor barge.....	20,848.00			20,848.00
Relay pump barge.....	50,000.00			50,000.00
Other equipment:				
Road rollers.....	13,786.00			13,786.00
Automobiles.....	2,651.23			2,651.23
Excavators.....	17,370.00			17,370.00
Reserve equipment.....	1,000.00			
Returned to store.....			1,000.00	
Total.....	4,140,923.88	408,327.66	44,761.76	4,504,489.78

<sup>1</sup> Adjustment prior years.

TABLE No. 17.—*Business property by divisions*

	Total	Fixed property	Equipment	Stores	Cash	Work in process	Suspense	Undistributed business capital
Electric light and power system.....	\$7,613,902.45	\$7,437,233.53	\$10,056.51	\$11,592.41			\$15,000.00	\$170,000.00
Electric work.....	108,161.42		25,586.86	12,163.48		\$5,212.40	198.68	65,000.00
Telephone and telegraph work.....	16,512.71		7,226.40	9,286.31				
Water system.....	3,575,739.01	3,413,586.20	22,325.18	14,051.04			766.59	125,000.00
Municipal engineering work.....	260,603.00		86,220.82	75,501.27		9,940.88	1 6,059.97	95,000.00
Public works, Panama.....	932,723.51	1,469,266.45						
Repayments.....		1 536,542.94						
Balance.....		932,723.51						
Public works, Colon.....	780,219.52	1,249,502.71						
Repayments.....		1 469,283.19						
Balance.....		780,219.52						
Shops and dry docks.....	1,730,415.92	264,783.98	343,581.60	35,351.90		645,920.67	1 9,222.23	450,000.00
Steamships.....	1,200,000.00	1,200,000.00						
Docks, wharves, and piers.....	2,368,200.26	2,368,200.26						
Coaling plants.....	500,000.00	500,000.00						
Colliers and coal barges.....	3,629,232.00	3,629,232.00						
Fuel-oil plants.....	1,454,989.77	1,245,896.03	5,678.93	163,177.57			1 39,762.76	80,000.00
Business storehouses.....	800,000.00	300,000.00						500,000.00
Animal and motor transportation.....	478,760.23	14,085.00	419,675.23					45,000.00
Motor-car repair shop.....	56,854.34	16,633.32	14,347.07	12,873.95				13,000.00
Building repairs and construction.....	316,906.30	11,690.00	37,629.83	5,412.54		16,069.95	1 3,896.02	250,000.00
Panama Canal Press.....	128,598.33		17,939.68	83,981.61		11,677.04		15,000.00
Gold quarters.....	3,862,889.57	3,862,889.57					1 20,985.66	
Silver quarters.....	605,405.34	626,391.00						
Rented buildings.....	400,309.28	372,629.41	27,679.87					
District quartermasters' supplies.....	256,623.11	162,054.40	74,185.00	4,211.01	\$4,286.90	7,416.84	534.18	5,000.00
Hotel Tivoli.....	2,232.26		2,232.26				1 531.04	
Farm Bureau.....	25,303.17		23,205.27	2,097.90				
Salvage section.....	250,385.20			250,385.20				
Sand and gravel.....				1,848.88		5.60	1 1,577.95	
Nautical charts and publications.....	276.53						7,378.40	
Fortifications division.....	7,378.40							
Total business property.....	31,363,145.81	27,138,267.73	1,117,570.51	681,935.07	4,286.90	696,243.38	1 88,157.78	1,813,000.00

1 Credit.

TABLE NO. 17.—*Business property by divisions*—Continued

## UNDISTRIBUTED BUSINESS CAPITAL BY DIVISIONS

Divisions	Accounts receivable	Working cash	Stores	Total
Electric light and power system.....	\$50,000	\$20,000	\$100,000	\$170,000
Electric work.....	5,000	10,000	50,000	65,000
Water system.....	45,000	30,000	50,000	125,000
Municipal engineering work.....	25,000	20,000	50,000	95,000
Shops and dry docks.....	100,000	100,000	250,000	450,000
Fuel-oil plants.....	75,000	5,000	.....	80,000
Business storehouse.....	250,000	.....	250,000	500,000
Animal and motor transportation.....	15,000	10,000	20,000	45,000
Motor-car repair shop.....	.....	3,000	10,000	13,000
Building repairs and construction.....	25,000	25,000	200,000	250,000
Panama Canal Press.....	10,000	5,000	.....	15,000
Hotel Tivoli.....	1,000	4,000	.....	5,000
Total.....	601,000	232,000	980,000	1,813,000

TABLE NO. 18.—*Business fixed property, fiscal year ended June 30, 1927*

	Balance July 1, 1926	Additions	With- drawals	Balance June 30, 1927
Hydroelectric plant.....	\$1,663,956.79	.....	.....	.....
Air compressor and motor.....	.....	.....	\$1,500.00	\$1,662,456.79
Miraflores electric power plants, old and new.....	1,275,584.89	.....	.....	.....
Old steam plant written out— Building transferred.....	.....	.....	100,000.00	.....
Machinery surveyed.....	.....	.....	208,270.31	.....
New Diesel electric power plant.....	.....	\$476,248.67	.....	1,443,563.25
Substations.....	1,841,045.18	.....	.....	.....
Substation for Summit.....	.....	19,529.17	.....	1,860,574.35
Transmission system.....	1,355,733.38	.....	.....	1,355,733.38
Distribution lines.....	1,114,925.76	.....	.....	1,114,925.76
Total, electrical division.....	7,251,216.00	495,777.84	309,770.31	7,437,253.53
Panama water system.....	1,840,794.46	.....	.....	.....
Roofing tank at Miraflores.....	.....	1,715.00	.....	1,842,509.46
Colon water system.....	592,587.59	.....	.....	.....
Gatun Lake to Mount Hope pipe line.....	.....	213,201.43	.....	.....
Clear water well, Mount Hope.....	.....	55,973.33	.....	.....
Brazos Brook pipe line taken up.....	.....	.....	27,369.88	.....
Brazos Brook Reservoir, depreciation applied.....	.....	.....	9,898.87	.....
Brazos Brook pipe line, depreciation applied.....	.....	.....	5,006.24	819,487.36
Zone water system.....	607,507.47	.....	.....	.....
Stilson's pond reservoir.....	.....	35,007.01	.....	.....
Stilson's pond pipe line.....	.....	25,118.91	.....	.....
Gamboa filter.....	.....	12,056.38	.....	.....
New Cristobal pipe line.....	.....	59,141.11	.....	.....
Clear water well, Agua Clara.....	.....	12,758.50	.....	751,589.38
Total, municipal engineering division.....	3,040,889.52	414,971.67	42,274.99	3,413,586.20
Waterworks and sewers, Panama.....	876,353.22	.....	.....	876,353.22
Pavements.....	592,913.23	.....	.....	592,913.23
Total, public works, Panama.....	1,469,266.45	.....	.....	1,469,266.45
Less repayments.....	505,838.56	.....	30,704.38	536,542.94
Balance.....	963,427.89	.....	30,704.38	932,723.51
Waterworks and sewers, Colon.....	623,883.68	.....	.....	623,883.68
Pavements.....	625,619.03	.....	.....	625,619.03
Total, public works, Colon.....	1,249,502.71	.....	.....	1,249,502.71
Less repayments.....	443,599.10	.....	25,684.09	469,283.19
Balance.....	805,903.61	.....	25,684.09	780,219.52
Dry dock, Cristobal.....	50,000.00	.....	.....	50,000.00
Marine barracks, Cristobal shops.....	.....	18,283.98	.....	8,283.98

<sup>1</sup> Adjustments prior years.

TABLE No. 18—*Business fixed property, fiscal year ended June 30, 1927*—Contd.

	Balance July 1, 1926	Additions	With- drawals	Balance June 30, 1927
Roundhouse, Balboa.....	\$111,500.00			\$111,500.00
Car and paint shop, Balboa.....	95,000.00			95,000.00
Total, shops and dry docks.....	256,500.00	\$8,283.98		264,783.98
Steamships:				
Panama (sold).....	400,000.00		\$400,000.00	
Ancon.....	600,000.00			600,000.00
Cristobal.....	600,000.00			600,000.00
Total, steamships.....	1,600,000.00		400,000.00	1,200,000.00
Pier 18, Balboa.....	1,168,200.26			1,168,200.26
Pier 6, Cristobal.....	1,200,000.00			1,200,000.00
Total, docks, wharves, and piers.....	2,368,200.26			2,368,200.26
Coaling plant, Cristobal.....	500,000.00			500,000.00
Colliers.....	2,029,232.00			2,029,232.00
Coal barges.....	1,600,000.00			1,600,000.00
Total, colliers and barges.....	3,629,232.00			3,629,232.00
Fuel oil plant, Balboa.....	470,695.19			
Additional lines to Piers 6 and 7.....		<sup>1</sup> 21,315.78		
Changes in 12-inch oil line from tanks to plant.....		<sup>1</sup> 13,600.00		
Install 10-inch pipe line near house 789, Balboa.....		<sup>1</sup> 6,192.35		511,803.32
Fuel-oil plant, Cristobal.....	618,968.00			
Changes in manifold system.....		<sup>1</sup> 10,526.44		
12-inch oil line, Mount Hope to Pier 6.....		<sup>1</sup> 58,510.41		
Gasoline line from tank 160 to filling stations.....		<sup>1</sup> 6,575.04		
Fire wall for tank 160.....		<sup>1</sup> 1,535.58		
Oil line to Pier 8, Cristobal.....		<sup>1</sup> 37,977.24		734,092.71
Total, fuel oil plants.....	1,089,663.19	156,232.84		1,245,896.03
Business storehouses.....	300,000.00			300,000.00
Animal and motor transportation.....	14,285.00			
Building No. 55, Pedro Miguel transferred.....			200.00	14,085.00
Motor car repair shop.....	16,633.32			16,633.32
Building repairs and construction.....	11,690.00			11,690.00
Gold quarters.....	3,472,748.39			
87 new houses at New Cristobal.....		369,832.45		
7 cottages New Cristobal, adjustment.....		<sup>1</sup> 51,408.73		
House 1203, Cristobal, demolished.....			14,500.00	
House 806, Colon, transferred.....			10,800.00	
House 453, Ancon, transferred.....			5,800.00	3,862,889.57
Silver quarters.....	630,741.00			
House 744, New Getum, to U. S. Army.....			150.00	
21 houses sold and demolished.....			4,200.00	626,391.00
Rented buildings.....	315,032.82			
Additional garages, stalls.....		31,460.01		
New stalls, adjustment.....		<sup>1</sup> 26,136.58		372,629.41
Hotel Tivoli.....	161,960.07			
2-stall garage.....		94.33		162,054.40
Grand total, business property.....	26,428,153.07	1,554,198.43	844,083.77	27,138,267.73

<sup>1</sup> Adjustments prior years.



TABLE NO. 19.—*Canal business equipment*

	Balance July 1, 1926	Additions	With- drawals	Balance June 30, 1927
Electric light and power system: Machinery and tools.....	\$10,056.51			\$10,056.51
Electric work:				
Machinery and tools.....	17,934.57			17,934.57
Automobiles.....	8,168.10		\$515.81	7,652.29
Telephone and telegraph work: Machinery and tools.....	7,226.40			7,226.40
Water system: Machinery and tools.....	26,177.78		3,852.60	22,325.18
Municipal engineering work: Machinery and tools.....	79,232.52	\$9,287.30	2,299.00	86,220.82
Shops and dry docks: Machinery and tools.....	343,581.60			343,581.60
Fuel-oil plants: Machinery and tools.....	5,678.93			5,678.93
Animal and motor transportation:				
Machinery and tools.....	7,970.86	2,437.41		10,408.27
Automobiles.....	215,588.01	<sup>1</sup> 198,106.61	7,228.87	406,465.75
Mules.....	2,801.21			2,801.21
Motor car repair shop: Machinery and tools.....	14,347.07			14,347.07
Building repair and construction: Machinery and tools.....	14,538.27	23,071.56		37,629.83
Panama Canal Press: Machinery and tools.....	17,939.68			17,939.68
Rented buildings: Restaurants—Machinery and tools.....	27,679.87			27,679.87
Hotel Tivoli: Machinery and tools.....	74,185.00			74,185.00
Farm bureau:				
Machinery and tools.....	1,145.50			1,145.50
Mules.....	1,086.76			1,086.76
Salvage section:				
Machinery and tools.....	16,902.79	1,024.98		17,927.77
Barges.....	5,277.50			5,277.50
Total.....	897,538.93	233,927.86	13,896.23	117,570.51

<sup>1</sup> Adjustment prior years.TABLE NO. 20.—*Status of public works in cities of Panama and Colon June 30, 1927*

	Total	Panama	Colon
Construction cost:			
Waterworks and sewers.....	\$1,500,236.90	\$876,353.22	\$623,883.68
Pavements.....	1,218,532.26	592,913.23	625,619.03
Total.....	2,718,769.16	1,469,266.45	1,249,502.71
Maintenance, operation, and repairs (including proportion of Zone system:)	3,344,445.52	1,941,474.66	1,402,970.86
Interest at 2 per cent per annum:			
Waterworks and sewers.....	448,238.05	249,114.06	199,123.99
Pavements.....	365,132.83	192,053.26	173,079.57
Zone system.....	254,691.66	171,284.21	83,407.45
Total.....	1,068,062.54	612,451.53	455,611.01
Total payable from water rentals.....	7,131,277.22	4,023,192.64	3,108,084.58
Water rentals and deficit payments:			
Maintenance, operation, and repairs.....	3,344,445.52	1,941,474.66	1,402,970.86
Interest.....	1,068,062.54	612,451.53	455,611.01
Proportion of capital cost.....	943,933.61	474,650.42	469,283.19
Total.....	5,356,441.67	3,028,576.61	2,327,865.06
Unpaid deficit bills: To be applied to capital cost.....	61,892.52	61,892.52	
Capital cost reimbursable June 30, 1927 (in addition to unpaid deficit bills):			
Waterworks and sewers.....	963,110.77	562,462.19	400,648.58
Pavements.....	749,832.26	370,261.32	379,570.94
Total.....	1,712,943.03	932,723.51	780,219.52
Total payable from water rentals.....	7,131,277.22	4,023,192.64	3,108,084.58

TABLE NO. 21.—*Canal transit material and supplies on hand*

	Fiscal year 1926	Fiscal year 1927
Balboa store.....	\$2, 946, 264. 01	\$2, 676, 132. 61
Medical store.....	67, 592. 87	67, 427. 78
Stationery store, administration building.....	16, 222. 75	18, 881. 82
Paraiso store.....	681, 324. 30	603, 111. 85
Cristobal store.....	392, 853. 72	528, 681. 44
Corozal store.....	437, 157. 01	438, 740. 91
District quartermasters' stores:		
Balboa.....	4, 109. 68	4, 429. 21
Pedro Miguel.....	192. 21	151. 43
Gatun.....	84. 52	240. 90
Cristobal.....	185. 75	326. 58
Total.....	4, 572. 16	5, 148. 12
Invoices in suspense.....	1 9, 649. 07	10, 334. 60
Materials drawn by divisions not yet charged to the work.....	29, 431. 88	29, 250. 58
Total.....	4, 565, 769. 63	4, 382, 709. 71
Less reserve for stores adjustments.....	520, 238. 96	412, 517. 06
Book value of stores on hand.....	4, 045, 530. 67	3, 970, 192. 65

<sup>1</sup> Denotes credit.TABLE NO. 22.—*Statement of material and supplies received, issued, and sold, all stores, during fiscal year ended June 30, 1927*

Stock on hand July 1, 1926:			
Standard stock.....	\$4, 836, 889. 71		
Scrap and obsolete.....	127, 572. 75		
			\$4, 964, 462. 46
Received during the year:			
By purchase.....	\$3, 788, 828. 23		
Direct to divisions.....	1, 198, 045. 94		
		4, 986, 874. 17	
By manufacture—			
Mechanical division.....	394, 861. 49		
Dredging division, sand and gravel.....	239, 406. 58		
		634, 268. 07	
Total.....			5, 621, 142. 24
Total.....			10, 585, 604. 70
Issued and sold during the year:			
Issued—			
To business divisions.....	2, 822, 096. 20		
To transit divisions.....	1, 671, 536. 05		
		4, 493, 632. 25	
Sold.....		1, 189, 490. 04	
Empty containers returned, etc.....		19, 516. 30	
Net inventory adjustments.....		42, 297. 20	
			5, 744, 935. 79
On hand July 1, 1927:			
Standard stock.....	4, 742, 715. 93		
Scrap and obsolete.....	97, 952. 98		
			4, 840, 668. 91
Drawn by divisions not yet charged to work:			
Business divisions.....	184, 390. 69		
Transit division.....	29, 250. 58		
			213, 641. 27
Grand total.....			5, 054, 310. 18

TABLE No. 24.—*Statement of canal earnings, expenses, and net expenses*

	Fiscal year 1927		Net canal expenses
	Canal expenses	Earnings	
<b>Executive department:</b>			
Executive offices.....	\$333,691.73	\$122,572.35	\$211,119.38
Cables and radiograms.....	681.11	337.52	343.59
General executive expenses.....	513.85	-----	513.85
Shipping commissioner.....	40,669.82	-----	40,669.82
Canal Record.....	14,196.09	130.10	14,065.99
Land office.....	2,400.00	-----	2,400.00
Law books.....	381.16	-----	381.16
Railroad motor cars.....	1,706.65	-----	1,706.65
Clubs and playgrounds.....	199,108.00	79,108.00	120,000.00
Total.....	593,348.41	202,147.97	391,200.44
<b>Accounting department:</b>			
Accounting office.....	422,668.97	267,543.00	155,125.97
Paymaster's office.....	45,755.72	27,660.00	18,095.72
Collector's office.....	51,899.82	32,037.00	19,862.82
Total.....	520,324.51	327,240.00	193,084.51
<b>Washington office:</b>			
Chief of office.....	47,452.72	348.00	47,104.72
Purchasing bureau.....	181,351.61	41,209.15	140,142.46
Assistant auditor's office.....	28,000.99	20.35	27,980.64
Disbursing clerk's office.....	7,947.73	5.99	7,941.74
Total.....	264,753.05	41,583.49	223,169.56
<b>Civil government:</b>			
Civil affairs.....	17,673.85	6.00	17,667.85
Customs.....	27,023.17	345.00	26,678.17
Posts.....	168,603.59	11,744.80	156,858.79
Schools.....	270,355.77	9,751.48	260,604.29
Fire protection.....	119,154.02	93.39	119,060.63
Police and prisons.....	397,410.59	44,633.11	352,777.48
District court.....	27,061.04	56.95	27,004.09
District attorney.....	13,955.62	-----	13,955.62
Marshal.....	10,124.55	-----	10,124.55
Magistrates' courts.....	15,943.84	-----	15,943.84
Total.....	1,067,306.04	66,630.73	1,000,675.31
<b>Health department:</b>			
Chief health office.....	23,999.75	48.00	23,951.75
Ancon Hospital.....	603,281.36	372,318.27	230,963.09
Colon Hospital.....	101,706.18	53,907.79	47,798.39
Dispensaries.....	54,470.29	18,175.69	36,294.60
Corozal farm and asylum.....	189,753.39	164,016.94	25,736.45
Palo Seco leper asylum.....	62,489.72	20,425.75	42,063.97
Medical storehouse.....	8,345.93	-----	8,345.93
Quarantine service.....	71,686.95	27,250.52	44,436.43
Sanitation, Panama.....	56,354.89	7,196.78	49,158.11
Street cleaning and garbage collection, Panama.....	62,062.88	49,249.19	12,813.69
Sanitation, Colon.....	20,865.52	1,446.34	19,419.18
Street cleaning and garbage collection, Colon.....	64,130.93	51,247.54	12,883.39
Sanitation, Zone.....	163,326.19	47,242.29	116,083.90
Total.....	1,482,473.98	812,525.10	669,948.88
<b>Office engineer.....</b>	69,690.21	54,047.82	15,642.39
<b>Meteorology and hydrography.....</b>	34,693.11	411.59	34,278.52
<b>Surveys.....</b>	38,575.93	5,292.29	33,283.64
<b>Storehouses, general:</b>			
Balboa storehouse.....	366,525.31	192,854.94	173,670.37
Administration building store.....	6,564.68	-----	6,564.68
Paraiso storehouse.....	25,872.85	4,180.46	21,692.39
Cristobal storehouse.....	142,392.75	26,893.72	115,499.03
Total.....	541,355.59	223,929.12	317,426.47
<b>Public buildings and grounds:</b>			
Superintendence.....	49,788.85	41,064.79	8,724.06
Balboa.....	214,444.28	105,452.15	108,992.13
Pedro Miguel.....	42,052.67	32,744.09	9,308.58
Gatun.....	30,388.97	22,542.46	7,846.51
Cristobal.....	64,530.21	29,646.83	34,883.38
Total.....	401,204.98	231,450.32	169,754.66

TABLE NO. 24.—*Statement of canal earnings, expenses, and net expenses—Contd.*

	Fiscal year 1927		Net canal expenses
	Canal expenses	Earnings	
Street lighting.....	\$15,454.40	-----	\$15,454.40
Water for municipal purposes.....	23,400.00	-----	23,400.00
Roads, streets, and sidewalks.....	104,069.33	-----	104,069.33
Storm sewers.....	15,781.68	-----	15,781.68
Miscellaneous general expense:			
Tracks and equipment maintenance.....	23,594.57	-----	23,594.57
Recruiting and repatriating employees.....	21,182.65	-----	21,182.65
Transportation, employees on Isthmus.....	120,000.00	-----	120,000.00
Maintenance, laborers' quarters.....	94,962.06	-----	94,962.06
Total.....	259,739.28	-----	259,739.28
Marine division:			
Marine superintendent.....	8,453.07	-----	8,453.07
Port captains—			
Balboa.....	125,762.57	\$4,952.39	120,810.18
Cristobal.....	58,040.12	20.00	58,020.12
Board of admcasurement.....	43,051.15	4,100.00	38,951.15
Board of local inspectors.....	5,123.28	1,971.10	3,152.18
Pilots—			
Balboa.....	149,916.59	98,072.15	51,844.44
Cristobal.....	179,396.73	226,574.00	147,177.27
Tugs and launches—			
Balboa.....	257,156.58	240,026.05	17,130.53
Cristobal.....	240,081.28	289,886.45	149,805.17
Handling lines—			
Balboa.....	120,248.44	130,358.00	110,109.56
Cristobal.....	131,237.54	133,568.00	12,330.46
Aids to navigation.....	219,653.98	23,110.08	196,543.90
Total.....	1,538,121.33	1,152,638.22	385,483.11
Lock operation and maintenance:			
Gatun locks—			
Superintendence.....	48,833.18	-----	-----
Operation.....	318,497.69	-----	-----
Maintenance.....	86,604.39	-----	-----
Overhaul.....	529,961.62	-----	-----
Total, Gatun locks.....	983,896.88	626.28	983,270.60
Pedro Miguel locks—			
Superintendence.....	19,850.18	-----	-----
Operation.....	221,555.08	-----	-----
Maintenance.....	129,890.44	-----	-----
Total, Pedro Miguel locks.....	371,295.70	12.76	371,282.94
Miraflres locks—			
Superintendence.....	32,952.71	-----	-----
Operation.....	238,182.19	-----	-----
Maintenance.....	201,876.84	-----	-----
Total, Miraflres locks.....	473,011.74	-----	473,011.74
Miraflres spillway.....	1,179.49	-----	1,179.49
Corozal store locks.....	8,939.70	-----	8,939.70
Total, locks.....	1,838,323.51	639.04	1,837,684.47
Gatun Dam, maintenance.....	59,910.67	8,929.10	50,981.57
Gatun spillway.....	3,153.48	-----	3,153.48
Damage to vessels in locks.....	265.00	-----	265.00
Damage to vessels in canal.....	598.55	-----	598.55
Channel maintenance:			
Atlantic entrance.....	143,930.50	-----	-----
Gatun Lake.....	72,602.53	-----	-----
Gaillard Cut.....	978,197.91	-----	-----
Miraflres Lake.....	127.63	-----	-----
Pacific entrance.....	851,439.57	-----	-----
Cristobal Harbor.....	66,545.61	-----	-----
Balboa Harbor.....	69,407.40	-----	-----
Removal floating constructions.....	39,493.09	-----	-----



TABLE NO. 24.—Statement of canal earnings, expenses, and net expenses—Contd.

	Fiscal year 1927		Net canal expenses
	Canal expenses	Earnings	
Channel maintenance—Continued.			
Floating derricks, maintenance	\$60,325.16		
Dredging division work	77,881.41	\$55,551.98	
Total	2,359,950.81	55,551.98	\$2,304,398.83
Total	11,232,493.85	3,183,019.77	8,049,474.08
Amortization	305,855.00		305,855.00
Depreciation	642,385.94		642,385.94
Grand total	12,180,734.79	3,183,019.77	8,997,715.02

<sup>1</sup> Indicates earnings exceeded expenses.

TABLE NO. 25.—Detail of canal transit revenues

	Fiscal year 1926	Fiscal year 1927
Tolls	\$22,927,456.03	\$24,217,185.32
Taxes, fees, fines, Canal Zone	64,128.48	67,356.25
Postal receipts	143,037.90	146,099.74
Interest on bank balances	10,000.00	10,000.00
Proceeds of Government property		167,970.28
Miscellaneous	514.12	197.23
Total	23,145,136.53	24,608,808.82

TABLE NO. 26.—Statement of business expenses, revenues, and profit and loss, fiscal year 1927

	Fiscal year 1927		Profit or loss	Fixed capital charge 3 per cent per annum
	Expenses	Revenues		
Electric light and power system	\$478,848.65	\$736,249.09	\$257,400.44	\$228,407.78
Electrical work	828,507.93	838,394.47	9,886.54	3,618.10
Telephone, telegraph, and signal system	185,638.38	186,269.30	630.92	500.71
Water system	484,743.62	515,357.49	30,613.87	80,960.23
Municipal engineering work	1,125,746.92	1,153,635.73	27,888.81	12,970.65
Public works, Panama	183,724.69	218,099.89	34,375.20	134,375.20
Public works, Colon	127,984.55	149,477.00	21,492.45	121,492.45
Shops and dry docks	3,018,555.65	3,067,711.86	49,126.21	48,433.49
Docks, wharves, and piers	71,918.21	92,024.38	20,106.17	71,046.00
Handling fuel oil	369,159.06	668,731.23	299,572.17	39,701.33
Business storehouses, including fuel oil	4,074,529.16	4,178,141.55	103,612.39	23,916.80
Animal and motor transportation	395,125.62	405,114.13	9,988.51	10,064.86
Motor-car repair shop	180,336.77	185,685.92	5,349.15	1,679.27
Building repairs and construction	1,760,338.35	1,799,891.10	39,552.75	14,028.17
Panama Canal Press	264,995.86	269,794.00	4,798.14	4,003.88
Quarters, gold	399,846.37	400,475.19	628.82	108,509.48
Quarters, silver	194,800.07	194,800.07		17,939.71
Building rentals	55,321.53	67,818.53	12,497.00	10,784.83
District quartermaster supplies and services	194,136.93	186,253.27	<sup>2</sup> 7,883.66	
Hotel Tivoli	222,257.23	248,994.26	26,737.03	7,581.13
Farm bureau and land rentals	38,858.59	46,142.09	7,283.50	67.08
Salvage section	91,354.58	46,820.35	<sup>2</sup> 44,534.23	749.83
Sand and gravel	105,578.29	72,044.27	<sup>2</sup> 33,534.02	3,654.65
Nautical charts and publications	1,303.21	2,251.85	948.64	11.11
Fortification division	148,477.55	148,477.55		
Grand total	15,002,117.77	15,878,651.57	<sup>3</sup> 876,536.80	744,496.74

<sup>1</sup> Figured at 2 per cent in accordance with contract.<sup>2</sup> Loss.

<sup>3</sup> Profits on public works, Panama and Colon, amounting to \$55,867.65 have been included in quarterly remittances to the United States Treasurer, covering interest and amortization collections from the Republic of Panama. The balance of the \$876,536.80, net profits above after deducting the \$55,867.65 already remitted, which balance amounts to \$820,669.15, will be immediately covered into the U. S. Treasury as miscellaneous receipts, United States revenues, in accordance with regulations.

TABLE No. 27.—*Comparison of expenses, revenues, and surplus to date*

## CANAL TRANSIT OPERATIONS

	Tolls	Taxes, fees, postal re- ceipts, etc.	Total trans- it revenues	Net canal trans- it expenses	Net revenues (surplus)
1914.....	\$14,618.68	-----	\$14,618.68	\$166,030.91	<sup>1</sup> \$151,412.23
1915.....	4,343,383.69	-----	4,343,383.69	4,123,128.09	220,255.60
1916.....	2,399,830.42	\$158,711.96	2,553,542.38	6,999,750.15	<sup>1</sup> 4,441,207.77
1917.....	5,631,781.66	176,617.04	5,808,398.70	6,788,047.60	<sup>1</sup> 979,648.90
1918.....	6,264,765.71	147,077.57	6,411,843.28	5,920,342.94	491,500.34
1919.....	6,156,118.95	197,898.03	6,354,016.98	6,112,194.77	241,822.21
1920.....	8,493,082.56	442,789.01	8,935,871.57	6,548,272.43	2,387,599.14
1921.....	11,261,919.31	778,197.39	12,040,116.70	9,328,300.14	2,711,816.56
Total.....	44,565,500.98	1,901,291.00	46,466,791.98	45,986,067.03	480,724.95
To business surplus.....	-----	480,724.95	480,724.95	-----	480,724.95
1922.....	44,565,500.98	1,420,566.05	45,986,067.03	45,986,067.03	-----
1923.....	11,193,383.47	192,208.85	11,385,592.32	7,919,017.63	3,466,574.69
1924.....	17,507,630.52	184,213.54	17,691,844.06	7,690,777.56	10,001,066.50
1925.....	24,289,603.16	392,250.73	24,681,853.89	8,373,905.39	16,307,948.50
1926.....	21,374,664.12	207,954.04	21,582,618.16	8,116,693.44	13,465,924.72
1927.....	22,927,456.03	217,680.50	23,145,136.53	7,993,468.47	15,151,668.06
1928.....	24,217,185.32	391,623.50	24,608,808.82	8,997,715.02	15,611,093.80
Total.....	166,075,423.60	3,006,497.21	169,081,920.81	95,077,644.54	74,004,276.27

## CANAL BUSINESS OPERATIONS

	Business revenues	Business expenses	Net revenues (surplus)
1914.....	\$690,298.32	\$695,720.71	<sup>1</sup> \$5,422.39
1915.....	2,135,074.92	2,191,475.70	<sup>1</sup> 56,400.78
1916.....	6,488,521.61	6,476,623.17	11,898.44
1917.....	7,579,588.44	7,540,160.78	39,427.66
1918.....	10,324,071.91	10,317,912.35	6,159.56
1919.....	13,684,881.18	13,623,853.92	61,027.26
1920.....	14,705,371.82	14,465,685.69	239,686.13
1921.....	15,232,317.08	14,668,105.88	564,211.20
Total.....	70,840,125.28	69,979,538.20	860,587.08
Expense carried in transit operation above.....	-----	379,862.13	<sup>1</sup> 379,862.13
Net revenues carried to surplus.....	70,840,125.28	70,359,400.33	480,724.95
Interest on public works, Panama and Colon, etc., not included in net revenues in prior years.....	619,584.59	-----	619,584.59
Adjustment status June 30, 1921.....	71,459,709.87	70,359,400.33	1,100,309.54
1922.....	7,747,227.57	7,423,968.41	323,259.16
1923.....	10,872,843.36	9,732,200.86	1,140,642.50
1924.....	12,968,777.29	12,067,153.17	901,624.12
1925.....	14,564,114.93	13,798,198.08	765,916.85
1926.....	15,874,478.01	15,033,167.72	841,310.29
1927.....	15,878,654.57	15,002,117.77	876,536.80
Total.....	149,365,805.60	143,416,206.34	5,949,599.26

## COMBINED OPERATIONS

	Revenues	Expenses	Surplus
Canal transit operations.....	\$169,081,920.81	\$95,077,644.54	\$74,004,276.27
Canal business operations.....	149,365,805.60	143,416,206.34	5,949,599.26
Total.....	318,447,726.41	238,493,850.88	79,953,875.53

<sup>1</sup> Indicates deficit.

TABLE NO. 28.—Statement of deductions for rent of gold quarters and allied charges from employees on The Panama Canal and Panama Railroad rolls, July 1, 1926, to June 30, 1927

## PANAMA CANAL ROLLS

Month	Rent and janitor	Current	Water	Telephone	Garage	Hospital	Miscellaneous	Total
1926								
July.....	\$25,627.54	\$3,814.67	\$1,950.56	\$1,625.84	\$2,466.55	\$3,238.12	\$25,383.02	\$64,106.30
August.....	25,055.04	4,106.09	1,896.99	1,752.14	2,492.61	3,403.82	35,708.97	74,415.66
September.....	25,669.13	3,935.51	1,890.81	1,742.03	2,500.41	4,765.31	34,573.96	75,077.19
October.....	27,302.19	4,070.15	1,983.59	2,223.29	2,532.10	4,617.59	27,316.16	70,045.07
November.....	26,911.27	4,370.08	1,979.68	2,093.73	2,762.17	3,031.90	21,850.47	62,999.30
December.....	26,790.54	4,315.94	2,008.69	2,219.61	2,641.18	3,849.49	18,442.15	60,267.60
1927								
January.....	26,672.27	4,679.49	1,997.69	2,104.28	2,641.08	4,056.38	16,517.58	58,668.77
February.....	26,900.44	4,103.83	2,076.17	2,082.95	2,606.77	3,502.54	14,393.27	55,665.97
March.....	26,999.89	3,849.69	2,030.45	2,198.87	2,624.17	3,721.30	13,038.38	54,462.75
April.....	26,564.22	4,054.96	1,996.44	2,078.92	2,591.63	3,320.45	15,851.07	56,457.69
May.....	26,750.02	4,005.15	2,004.00	2,113.77	2,788.95	2,990.88	21,955.63	62,608.40
June.....	27,186.33	4,238.30	2,044.14	2,042.57	2,819.07	3,771.10	28,673.84	70,825.35
Total.....	318,428.88	49,593.86	23,859.24	24,278.00	31,466.69	44,268.88	273,704.50	765,600.05

## PANAMA RAILROAD ROLLS

1926								
July.....	\$4,906.30	\$678.29	\$352.15	\$256.52	\$272.14	\$445.60	\$4,848.40	\$11,759.40
August.....	4,985.34	702.02	366.79	277.87	311.66	549.80	6,634.98	13,828.46
September.....	4,886.64	658.06	352.96	290.40	321.93	419.51	5,183.04	12,112.54
October.....	4,933.18	674.34	347.87	318.72	328.07	549.20	3,856.80	11,068.18
November.....	4,832.45	692.03	350.73	299.87	310.20	436.90	3,360.46	10,282.64
December.....	4,865.35	730.08	357.40	323.59	316.47	774.25	3,191.37	10,558.51
1927								
January.....	4,861.98	742.71	352.10	283.48	294.47	676.44	3,020.61	10,231.79
February.....	4,973.83	656.57	362.46	351.99	275.67	1,081.94	2,432.33	10,134.79
March.....	4,903.19	609.57	354.29	379.47	326.04	494.93	2,251.51	9,319.00
April.....	5,001.46	629.12	354.09	264.13	288.57	468.53	2,351.19	9,357.09
May.....	5,037.87	631.96	355.76	336.94	284.49	503.07	3,971.54	11,121.63
June.....	5,311.75	688.53	376.03	327.34	295.04	573.60	6,054.41	13,626.70
Total.....	59,499.34	8,093.28	4,282.63	3,710.32	3,624.75	6,973.77	47,156.64	133,340.73
Grand total.....	377,928.22	57,687.14	28,141.87	27,988.32	35,091.44	51,242.65	320,861.14	898,940.78

TABLE NO. 29.—Detail of replacement reserves

	Fiscal year 1926	Fiscal year 1927
Canal transit property:		
Equipment—		
Tugs.....	\$472,034.84	\$491,674.59
Supply boats.....	22,731.60	25,131.60
Launches.....	109,226.84	108,767.66
Dredges.....	567,228.12	616,608.12
Barges.....	238,392.88	422,455.14
Crane boat.....	5,600.00	7,280.00
Graders.....	23,187.60	25,923.60
Drill barges.....	13,760.33	24,010.25
Air-compressor barge.....	11,618.84	12,952.28
Relay barges.....	6,250.08	9,375.12
Road rollers.....	10,756.16	11,308.04
Automobiles.....	1,103.01	1,351.17
Excavators.....	3,474.00	5,211.00
Reserve equipment.....	168.55	175.20
Total Canal transit property.....	1,485,532.85	1,762,223.77
Business property:		
Fixed property—		
Electric light and power system.....	1,403,884.91	249,456.94
Water system.....	161,870.57	230,432.70
Dry docks.....	21,940.52	25,000.00
Fuel-oil plants.....	281,220.81	280,874.33
Animal and motor transportation.....	5,713.62	7,042.66
Motor-car repair shop.....	6,487.84	5,729.67

TABLE NO. 29.—*Detail of replacement reserves—Continued*

	Fiscal year 1926	Fiscal year 1927
Business property—Continued.		
Fixed property—Continued.		
Building repairs and construction.....	\$4,551.54	\$5,720.70
Panama Canal Press.....		15,000.00
Gold quarters.....	24,992.91	112,430.45
Rented buildings.....	29,326.10	37,782.40
Hotel Tivoli.....	64,131.19	80,323.37
Total fixed property.....	2,004,120.01	1,049,793.22
Equipment, machinery, and tools—		
Electric light and power system.....		2,721.23
Electric work.....	5,393.55	7,117.52
Telephone and telegraph.....	<sup>1</sup> 2,241.86	103.74
Water system.....	2,374.84	2,375.38
Municipal engineering work.....	5,776.64	44,223.58
Shops and dry docks.....	30,587.47	36,779.56
Fuel-oil plants.....	1,402.69	3,286.99
Business—Storehouses.....		19,242.37
Animal and motor transportation.....	68,972.21	30,189.11
Motor-car repair shop.....		1,574.46
Building repairs and construction.....		25,253.88
Panama Canal Press.....	23,185.76	14,138.70
Rented buildings.....	2,560.71	5,063.63
Hotel Tivoli.....	1,984.40	4,411.01
Farm bureau.....		315.91
Marine salvage section.....	11,141.13	14,978.33
Total equipment, machinery, and tools.....	151,137.54	211,775.40
Total business property.....	2,155,257.55	1,261,568.62
Grand total.....	3,640,790.40	3,023,792.39

<sup>1</sup> Debit.TABLE NO. 30.—*Detail of repair reserves*

	Fiscal year 1926	Fiscal year 1927
Canal transit property:		
Equipment—		
Tugs.....	\$503,236.76	\$502,742.03
Supply boats.....	5,972.69	5,560.58
Launches.....	51,141.27	58,652.11
Dredges.....	232,315.38	267,857.78
Barges.....	227,628.47	190,754.78
Crane boat.....	8,699.75	11,646.44
Graders.....	2,590.39	4,568.90
Drill barges.....	11,213.31	<sup>1</sup> 3,103.13
Air-compressor barge.....	7,273.90	7,273.90
Relay barges.....	<sup>1</sup> 5,971.64	<sup>1</sup> 32,340.53
Road rollers.....	<sup>1</sup> 2,439.95	<sup>1</sup> 1,909.60
Total equipment.....	1,041,660.33	1,021,703.26
Business property:		
Fixed property—		
Electric light and power system.....	24,901.25	18,430.83
Shops and dry docks.....	173,597.59	298,491.30
Fuel-oil plants.....	372,613.50	413,154.96
Business storehouses.....	66,594.72	104,123.91
Hotel Tivoli.....	5,982.75	3,357.16
Farm Bureau.....		4,375.00
Total fixed property.....	643,689.81	846,933.16
Equipment—		
Shops and dry docks.....	101,448.01	106,866.26
Building repairs and construction.....	4,538.83	5,923.19
Marine salvage section.....	12,394.44	6,085.70
Total equipment.....	118,381.28	118,875.15
Total business property.....	762,071.09	965,808.31
Grand total.....	1,803,731.42	1,987,511.57

<sup>1</sup> Debit



TABLE NO. 31.—*Details of gratuity reserves*

	Fiscal year 1926	Fiscal year 1927
Electrical division.....	\$99,029.14	\$105,033.43
Municipal engineering division.....	53,496.17	49,688.85
Mechanical division—shops and dry docks.....	342,478.16	318,911.37
Building repairs and construction division.....	32,767.79	34,189.36
Fortification division.....	10,861.46	11,334.11
Total.....	538,632.72	519,157.12

TABLE NO. 32.—*Detail of cost of production and distribution of electric current*

	Fiscal year 1926	Fiscal year 1927
Gatun hydroelectric generating station:		
Operation and maintenance.....	\$36,395.19	\$40,087.40
Division and general expense.....	12,995.10	13,092.62
Reserve for depreciation.....	25,038.96	24,959.40
Reserve for repairs.....	2,400.00	2,400.00
Total cost.....	76,829.25	80,539.42
Net kilowatt-hours generated.....	54,407,930	59,003,218
Unit cost.....	\$0.0014	\$0.0014
Miraflores steam electric generating station (old plant): <sup>1</sup>		
Operation and maintenance.....	\$94,756.91	\$46,643.45
Division and general expense.....	12,127.40	4,484.12
Reserve for depreciation.....	4,624.08	2,312.04
Reserve for repairs.....	1,320.00	660.00
Total cost.....	112,828.39	54,099.61
Miraflores Diesel electric generating station (new plant): <sup>1</sup>		
Operation and maintenance.....		33,025.88
Division and general expense.....		4,131.77
Reserve for depreciation.....		10,420.95
Reserve for repairs.....		
Total cost.....		47,578.60
Operation of substations:		
Balboa.....	19,314.26	17,229.31
Cristobal.....	20,325.18	25,197.98
Gatun.....	21,828.89	23,121.90
Miraflores.....	22,701.50	25,345.74
Gamboa.....	2,137.80	2,420.13
Division and general expense.....	27,915.21	26,972.37
Reserve for depreciation.....	27,615.72	27,615.72
Reserve for repairs.....	1,500.00	1,500.00
Total cost.....	143,338.56	149,403.15
Transmission lines:		
Inspection and maintenance.....	26,332.37	18,975.49
Division and general expense.....	7,296.28	5,312.87
Reserve for depreciation.....	20,336.04	20,336.04
Reserve for repairs.....	4,980.00	4,980.00
Total cost.....	58,944.69	49,604.40
Distribution lines:		
Inspection and maintenance.....	108,556.82	79,687.16
Division and general expense.....	1,095.16	1,232.51
Reserve for depreciation.....	16,723.80	16,723.80
Total cost.....	126,375.78	97,623.47
Grand total cost of distributed power.....	518,316.67	478,848.65
Total net kilowatt-hours (including line loss) <sup>2</sup> .....	56,177,590	57,861,918
Unit cost exclusive of capital charges.....	\$0.0092	\$0.0083

<sup>1</sup> The Miraflores generating station is operated as a reserve station and for stand-by service. On Dec. 31, 1926, the old steam generating station was abandoned and the new Diesel station was placed in service instead. During the fiscal year 1926 plant was operated full time from Jan. 28 to June 7 on account of water shortage, while during fiscal year 1927 it was required to carry load only on 46 occasions.

<sup>2</sup> The difference between the 59,003,218 kilowatt-hours generated at Gatun and 57,861,918 net kilowatt-hours produced in 1927 is covered by 1,141,300 kilowatt-hours consumed at Miraflores steam generating plant in excess of production.

TABLE No. 33.—Detailed cost of production of water per 1,000 gallons

## TOTAL COST OF OPERATION OF WATER SYSTEM

	Fiscal year 1926			Fiscal year 1927		
	Amount	Quantity	Unit cost	Amount	Quantity	Unit cost
Pacific system:		<i>Thousand gallons</i>			<i>Thousand gallons</i>	
Operation, pump stations—						
Balboa.....	\$38,445.88	2,274,247	\$0.0169	\$37,290.27	2,270,026	\$0.0164
Miraflores.....	9,971.93	378,983	.0263	10,335.78	385,709	.0268
Paraiso.....	4,860.23	65,354	.0744	5,635.93	70,031	.0805
Gamboa.....	63,919.80	3,048,517	.0210	64,363.30	2,993,421	.0215
Miraflores Lake.....	173.06					
Operation of filtration plant,						
Miraflores.....	62,379.53	2,905,637	.0215	60,440.17	2,923,873	.0207
Maintenance of reservoirs.....	434.04	2,905,637	.0001	513.78	2,923,873	.0002
Maintenance of pipe lines.....	49,489.01	2,905,637	.0170	40,313.16	2,923,873	.0138
Depreciation.....	30,875.13	2,905,637	.0106	31,264.44	2,923,873	.0107
Total, division expense.....	260,548.61	2,905,637	.0897	250,156.83	2,923,873	.0856
Overhead expense.....	12,045.70	2,905,637	.0041	11,422.47	2,923,873	.0040
Total expense.....	272,594.31	2,905,637	.0938	261,579.30	2,923,873	.0895
Atlantic system:						
Operation, pump stations—						
Mount Hope.....	36,613.07	1,376,677	.0266	34,490.78	1,390,858	.0248
Booster pump, Brazos						
Brook.....	580.71	571,406	.0010			
Gatun.....	24,396.43	498,418	.0489	24,936.06	510,414	.0488
Monte Lirio.....	2,437.32	2,219	1.0983	720.17	2,065	.350
Frijoles.....	2,373.51	5,061	.4690	1,617.89	5,362	.302
Operation of filtration plants—						
Mount Hope.....	16,471.68	1,379,203	.0119	24,320.76	1,391,789	.0175
Gatun.....	17,596.58	499,798	.0352	16,567.72	528,574	.0313
Maintenance of reservoirs.....	13,328.59	1,875,095	.0071	6,191.19	1,920,363	.0032
Maintenance of pipe lines.....	34,910.00	1,875,095	.0186	32,089.17	1,920,363	.0167
Depreciation.....	14,239.93	1,875,095	.0076	15,548.20	1,920,363	.0081
Total, division expense.....	162,947.82	1,875,095	.0869	156,481.94	1,920,363	.0815
Overhead expense.....	7,811.99	1,875,095	.0042	8,278.45	1,920,363	.0043
Total expense.....	170,759.81	1,875,095	.0911	164,760.39	1,920,363	.0858
Grand total, water system.....	443,354.12	4,780,732	.0927	426,339.69	4,844,236	.0880

## PROPORTION CHARGEABLE TO CANAL ZONE

		<i>Thousand gallons</i>			<i>Thousand gallons</i>	
Pacific system:						
Operation, pump stations—						
Balboa.....	\$18,745.13	1,110,902	\$0.0169	\$17,423.67	1,059,007	\$0.0164
Miraflores.....	9,971.93	378,983	.0263	10,335.78	385,709	.0268
Paraiso.....	4,860.23	65,354	.0744	5,635.93	70,031	.0805
Gamboa.....	38,637.86	1,885,172	.0205	38,264.96	1,782,402	.0215
Miraflores Lake.....	103.77					
Operation, filtration plant, Mira-						
flores.....	38,513.12	1,742,292	.0221	35,393.17	1,712,854	.0207
Maintenance, reservoirs.....	324.68	1,742,292	.0002	336.73	1,712,854	.0002
Maintenance, pipe lines.....	47,189.12	1,742,292	.0271	37,792.51	1,712,854	.0221
Depreciation.....	18,575.28	1,742,292	.0107	17,682.22	1,712,854	.0103
Total, division expense.....	176,921.12	1,742,292	.1015	162,864.97	1,712,854	.0951
Overhead expense.....	8,179.51	1,742,292	.0047	7,436.62	1,712,854	.0043
Total expense.....	185,100.63	1,742,292	.1062	170,301.59	1,712,854	.0994

TABLE NO. 33.—Detailed cost of production of water per 1,000 gallons—Continued  
PROPORTION CHARGEABLE TO CANAL ZONE—Continued

	Fiscal year 1926			Fiscal year 1927		
	Amount	Quantity	Unit cost	Amount	Quantity	Unit cost
Atlantic system:		<i>Thousand gallons</i>			<i>Thousand gallons</i>	
Operation, pump stations—						
Mount Hope.....	\$21,294.26	801,248	\$0.0266	\$18,918.88	748,660	\$0.0253
Booster pump, Brazos Brook.....	333.72	325,482	.0010			
Gatun.....	24,396.43	494,418	.0489	24,936.06	510,414	.0488
Monte Lirio.....	2,437.32	2,447	.9960	720.17	2,065	.3500
Frijoles.....	2,373.51	5,061	.4690	1,617.89	5,362	.3020
Operation, filtration plants—						
Mount Hope.....	9,614.51	803,774	.0120	13,301.68	753,772	.0176
Gatun.....	17,596.58	499,798	.0352	16,567.72	528,574	.0313
Maintenance, reservoirs.....	11,777.08	1,303,572	.0090	6,191.19	1,282,346	.0048
Maintenance, pipe lines.....	34,745.60	1,303,572	.0267	31,542.20	1,282,346	.0246
Depreciation.....	10,577.33	1,303,572	.0081	11,094.91	1,282,346	.0086
Total, division expense.....	135,146.34	1,303,572	.1037	124,890.70	1,282,346	.0974
Overhead expense.....	6,479.19	1,303,572	.0050	6,607.16	1,282,346	.0051
Total expense.....	141,625.53	1,303,572	.1087	131,497.86	1,282,346	.1025
Grand total, water system.....	326,726.16	3,045,864	.1073	301,799.45	2,995,200	.1007

## PROPORTION CHARGEABLE TO REPUBLIC OF PANAMA

Pacific system:						
Operation, pump stations—						
Balboa.....	\$19,700.75	1,163,345	\$0.0169	\$19,866.60	1,211,019	\$0.0164
Gamboa.....	25,281.94	1,163,345	.0216	26,098.34	1,211,019	.0215
Miraflores Lake.....	69.29	1,163,345	.0001			
Operation, filtration plant, Miraflores.....	23,866.41	1,163,345	.0205	25,047.00	1,211,019	.0207
Maintenance, reservoirs.....	109.36	1,163,345	.0002	177.05	1,211,019	.0002
Maintenance, pipe line.....	2,299.89	1,163,345	.0020	2,520.65	1,211,019	.0021
Depreciation.....	12,299.85	1,163,345	.0106	13,582.22	1,211,019	.0112
Total, division expense.....	83,627.49	1,163,345	.0719	87,291.86	1,211,019	.0721
Overhead expense.....	3,866.19	1,163,345	.0033	3,985.85	1,211,019	.0033
Total expense.....	87,493.68	1,163,345	.0752	91,277.71	1,211,019	.0754
Atlantic system:						
Operation, pump stations—						
Mount Hope.....	15,318.81	575,429	.0266	15,571.90	628,017	.0248
Booster pump, Brazos Brook.....	246.99	245,924	.0010			
Operation, filtration plant, Mount Hope.....	6,857.17	575,429	.0119	11,019.08	628,017	.0175
Maintenance, reservoirs.....	1,551.51	575,429	.0027			
Maintenance, pipe lines.....	164.40	575,429	.0003	546.97	628,017	.0009
Depreciation.....	3,662.60	575,429	.0064	4,453.29	628,017	.0071
Total, division expense.....	27,801.48	575,429	.0483	31,591.24	628,017	.0503
Overhead expense.....	1,332.80	575,429	.0023	1,671.29	628,017	.0027
Total expense.....	29,134.28	575,429	.0506	33,262.53	628,017	.0530
Grand total, water system.....	116,627.96	1,738,774	.0671	124,540.24	1,839,036	.0677

TABLE No. 34.—*Dredging operations (channel maintenance)*

YARDAGE		Atlantic entrance	Gatun Lake	Gaillard Cut	Pacific entrance	Cristobal Harbor	Balboa Harbor	Total
Quantities excavated:								
Dipper dredges—								
Earth.....			13, 150	372, 750	216, 300			602, 200
Rock.....			57, 850	1, 525, 150	607, 450			2, 190, 450
Total.....			71, 000	1, 897, 900	823, 750			2, 792, 650
Suction dredges—								
Earth.....		801, 900	255, 150	-----	757, 150	455, 500	270, 150	2, 539, 850
Rock.....				-----	12, 000	-----	-----	12, 000
Total.....		801, 900	255, 150	-----	769, 150	455, 500	270, 150	2, 551, 850
Total yardage.....		801, 900	326, 150	1, 897, 900	1, 592, 900	455, 500	270, 150	5, 344, 500
COST								
Operation:								
Dredging, dipper—								
Dipper dredges.....			\$9, 457.53	\$286, 147.71	\$171, 214.48			\$466, 819.72
Tugs and barges.....			16, 774.75	450, 781.05	125, 024.46			592, 580.26
Drill barges.....			-----	-----	257, 255.34			257, 255.34
Channel lights.....			-----	1, 419.20	-----			1, 419.20
General expense.....			2, 697.07	148, 465.41	67, 197.49			218, 359.97
Total, dipper dredging.....			28, 929.35	886, 813.37	620, 691.77			1, 536, 434.49
Cost per cubic yard.....			0.4075	0.4673	0.7535			0.5502
Dredging, suction—								
Suction dredges.....		\$79, 558.85	27, 030.41	-----	62, 698.13	\$34, 994.37	\$34, 063.75	238, 645.51
Relay pumps.....			-----	-----	-----	-----	9, 536.76	9, 536.76
Pipe lines.....		29, 921.08	2, 492.68	-----	10, 645.35	14, 486.29	8, 485.29	66, 030.69
Dikes.....		155.46	-----	-----	11, 785.36	-----	354.94	12, 295.76
General expense.....		24, 332.42	9, 692.41	-----	62, 743.46	9, 951.78	14, 133.20	120, 903.27
Total, suction dredging.....		134, 267.81	39, 215.50	-----	147, 872.30	59, 432.44	66, 623.94	447, 411.99
Cost per cubic yard.....		0.1674	0.1537	-----	0.1305	0.1305	0.2466	0.1753
Total dredging expenses.....		134, 267.81	68, 144.85	886, 813.37	768, 564.07	59, 432.44	66, 623.94	1, 983, 846.48
Total cost per cubic yard.....		0.1674	0.2089	0.4673	0.4825	0.1305	0.2466	0.3712
Expenses, idle equipment.....		9, 662.69	4, 457.68	63, 034.82	74, 305.59	7, 113.17	2, 783.46	161, 417.41
Drainage projects.....		-----	-----	28, 349.72	-----	-----	-----	28, 349.72
Miscellaneous operation.....		-----	-----	-----	-----	-----	-----	130, 785.22
Total channel maintenance.....		143, 930.50	72, 602.53	978, 197.91	842, 929.66	66, 545.61	69, 407.40	2, 304, 398.83



TABLE NO. 36.—*Postal service—Statement showing the monthly money-order business of the Canal Zone postal service during the fiscal year ended June 30, 1927*

Month	Money orders issued, including deposit money orders		Interest paid on deposit money orders	Money orders paid by Canal Zone post offices			Canal Zone money orders paid by—		
	Num-ber	Amount		United States	Costa Rica	Canal Zone <sup>1</sup>	Marti-nique	Costa Rica	United States
1926									
July.....	11,148	\$212,681.53	\$1,262.98	\$20,308.64	\$54.00	\$97,940.70	-----	-----	\$192,227.00
August.....	10,831	201,684.46	656.32	18,027.81	12.00	69,875.93	\$1.00	-----	142,867.44
September.....	10,498	204,600.07	1,199.12	18,520.40	17.10	76,719.56	-----	\$1,613.43	130,147.73
October.....	11,280	228,510.03	896.18	22,106.89	51.95	68,414.01	6.00	-----	125,008.54
November.....	13,334	254,559.69	1,135.79	19,296.82	15.00	66,348.62	-----	-----	126,544.78
December.....	15,664	252,408.59	809.17	27,906.51	31.40	77,381.63	2.00	2,044.50	161,870.03
1927									
January.....	10,602	196,246.75	621.17	18,079.21	21.50	52,610.76	-----	-----	166,948.75
February.....	11,774	242,343.32	684.25	17,887.43	27.00	64,466.33	-----	-----	160,795.38
March.....	14,501	289,935.00	1,249.37	21,404.34	47.00	84,728.87	-----	1,441.25	150,969.84
April.....	13,075	238,139.18	1,196.94	21,363.13	32.00	86,810.71	-----	-----	205,643.51
May.....	11,820	203,886.51	879.42	20,001.50	13.00	83,989.65	-----	-----	153,549.76
June.....	13,262	229,577.91	1,530.99	20,841.15	86.25	99,998.45	-----	-----	158,548.34
Total....	147,789	2,754,573.04	12,121.70	245,743.83	408.20	929,285.22	9.00	2,099.18	1,875,121.10

<sup>1</sup> Includes deposit money orders.<sup>2</sup> Canal Zone money orders paid in Costa Rica for quarter ended June 30, 1927, not received.TABLE NO. 37.—*Postal service—Statement of audited revenues, fiscal years 1907 to 1927, inclusive*

Year	Miscellaneous	Money-order fees	Stamp sales	Box rent	Newspaper postage	Total revenue	Interest on money-order funds
1907.....	-----	\$9,832.65	\$54,803.79	-----	-----	\$64,636.44	-----
1908.....	-----	19,309.14	72,708.67	-----	\$0.87	92,018.68	-----
1909.....	-----	21,720.93	74,241.87	-----	85.53	96,048.33	-----
1910.....	-----	22,980.96	83,765.60	-----	81.50	106,828.06	-----
1911.....	-----	23,457.98	82,585.21	-----	28.51	106,071.70	-----
1912.....	-----	22,889.93	87,497.21	-----	144.24	110,531.38	-----
1913.....	-----	23,366.31	100,599.15	-----	318.84	124,284.30	-----
1914.....	-----	19,408.44	90,792.63	-----	463.67	110,664.74	-----
1915.....	-----	13,169.55	75,202.29	\$2,973.65	988.50	92,333.99	-----
1916.....	-----	12,578.29	76,337.08	5,029.50	1,410.39	95,655.26	-----
1917.....	\$1,207.59	12,371.28	74,474.98	8,100.00	1,703.89	97,857.74	\$12,884.57
1918.....	1,344.75	11,918.35	83,939.74	8,147.30	1,825.38	107,175.52	32,940.22
1919.....	2,313.25	10,424.16	81,723.76	8,268.20	2,553.88	105,283.25	25,746.20
1920.....	1,951.64	10,207.59	87,096.72	8,776.55	1,782.53	109,815.03	22,141.88
1921.....	2,522.35	11,606.28	102,354.76	11,605.20	1,268.77	129,357.36	25,803.10
1922.....	2,152.09	9,153.56	93,683.24	10,637.50	1,525.87	117,152.26	32,696.81
1923.....	2,211.64	9,889.70	93,532.29	10,733.55	1,834.07	118,201.25	25,173.21
1924.....	1,962.68	9,835.21	95,458.07	11,001.10	2,154.41	120,411.47	22,397.25
1925.....	1,200.00	11,087.41	110,014.08	11,789.90	2,340.21	136,431.60	23,294.79
1926.....	1,274.11	13,021.27	113,657.74	12,167.10	2,204.12	142,324.34	23,988.30
1927.....	1,395.48	13,399.63	116,472.66	12,721.75	2,755.19	146,744.71	24,101.53
Total....	19,535.58	311,928.62	1,850,941.54	121,951.30	25,470.37	2,329,827.41	271,167.36

TABLE NO. 38.—*Postal service—Statement of postal revenues, fiscal year ended June 30, 1927*

Month	Receipts						Interest on money order funds
	Miscellaneous	Money order fees	Stamp sales	Box rent	Newspaper postage	Total revenue	
1926							
July.....	\$100.57	\$1,023.09	\$9,268.70	\$1,536.20	\$218.05	\$12,146.61	\$1,104.73
August.....	100.24	992.15	8,839.85	88.55	223.93	10,244.72	2,631.89
September.....	111.26	960.21	8,316.67	1,563.45	208.03	11,159.62	1,103.97
October.....	100.31	1,023.76	8,613.41	1,530.05	221.96	11,489.49	4,976.05
November.....	100.00	1,191.94	9,293.31	67.65	221.58	10,874.48	1,154.43
December.....	100.00	1,427.83	14,706.70	1,620.60	218.48	18,073.61	1,119.61
1927							
January.....	100.00	946.40	9,743.36	1,544.10	292.16	12,626.02	2,660.05
February.....	100.00	1,053.45	9,575.64	60.45	209.47	10,999.01	1,187.39
March.....	100.00	1,377.93	10,267.98	1,565.95	239.93	13,551.79	995.04
April.....	283.10	1,170.67	9,726.81	1,554.15	216.70	12,951.43	5,064.53
May.....	100.00	1,056.84	9,074.31	68.75	231.00	10,530.90	1,065.27
June.....	100.00	1,175.36	9,045.92	1,521.85	253.90	12,097.03	1,038.57
Total.....	1,395.48	13,399.63	116,472.66	12,721.75	2,755.19	146,744.71	24,101.53

TABLE NO. 39.—*Postal service—Statement of postal savings payments and deposit money order transactions (in lieu of postal savings system) for fiscal year ended June 30, 1927*

Month	Postal-savings certificates		Deposit money orders		
	Balance July 1, 1926	Paid	Balance July 1, 1926	Issued	Paid
1926					
July.....	\$181		\$465,815	\$52,145	\$78,335
August.....				46,370	49,330
September.....				54,140	58,695
October.....				66,360	53,780
November.....				78,855	50,060
December.....				52,095	56,105
1927					
January.....				55,105	36,560
February.....				75,735	49,130
March.....				62,540	66,480
April.....				62,075	67,260
May.....				48,295	64,550
June.....				59,970	79,500
Balance unpaid June 30, 1927.....		\$181			469,715
Total.....	181	181	465,815	713,685	1,179,500

TABLE NO. 42.—*Summary of income and expenditures, bureau of clubs and playgrounds, July 1, 1926, to June 30, 1927*

	Ancon	La Boca	Balboa	Pedro Miguel	Paraiso	Gatun	Gatun (silver)
Restaurant inventory, July 1, 1926.....	\$376.24	\$158.95	\$406.14	\$214.30	\$217.20	\$397.19	\$190.89
Cigars and candy, inventory, July 1, 1926.....	931.80	271.15	342.63	151.62	332.06	329.04	121.73
Merchandise, inventory, July 1, 1926.....	820.27	-----	2,453.40	101.78	-----	196.91	-----
Balboa storeroom inventory, July 1, 1926.....	-----	-----	8,852.98	-----	-----	-----	-----
Expenditures, fiscal year 1927.....	47,273.66	23,256.85	221,259.58	18,472.35	16,815.69	30,847.58	15,445.36
Earnings, fiscal year 1927.....	3,490.39	1,731.84	13,497.61	15,557.36	925.10	13,584.57	1,751.55
Total.....	52,892.36	25,418.79	229,817.12	13,382.69	18,290.05	28,186.15	17,509.53
Restaurant inventory, June 30, 1927.....	315.51	292.46	272.78	156.82	130.10	322.38	111.41
Cigars and candy inventory, June 30, 1927.....	644.60	520.57	399.07	223.14	334.94	265.71	193.13
Merchandise inventory, June 30, 1927.....	558.56	-----	2,116.50	71.65	-----	247.69	-----
Balboa storeroom inventory, June 30, 1927.....	-----	-----	8,035.54	-----	-----	-----	-----
Income, fiscal year 1927.....	51,373.69	24,605.76	218,993.23	12,931.08	17,825.01	27,350.37	17,204.99
Total.....	52,892.36	25,418.79	229,817.12	13,382.69	18,290.05	28,186.15	17,509.53

	Cristobal	Cristobal (silver)	Red tank	Balboa boathouse	General secretary	Total
Restaurant inventory, July 1, 1926.....	\$334.71	\$100.83	\$94.60	-----	-----	\$2,491.05
Cigars and candy inventory, July 1, 1926.....	579.04	860.62	228.06	\$63.51	-----	4,211.26
Merchandise inventory, July 1, 1926.....	653.17	-----	-----	281.52	-----	4,507.05
Balboa storeroom inventory, July 1, 1926.....	-----	-----	-----	-----	-----	8,852.98
Expenditures, fiscal year 1927.....	51,584.16	23,944.80	13,710.04	3,857.06	\$6,244.86	472,711.99
Earnings, fiscal year 1927.....	289.12	2,836.49	1,488.16	1,437.35	13,158.65	14,722.89
Total.....	53,440.20	27,742.74	15,520.86	2,764.74	3,086.21	488,051.44
Restaurant inventory, June 30, 1927.....	380.33	128.72	114.79	-----	-----	2,225.30
Cigars and candy inventory, June 30, 1927.....	576.96	881.98	216.81	70.19	-----	4,327.10
Merchandise inventory, June 30, 1927.....	548.93	-----	-----	280.08	-----	3,823.41
Balboa storeroom inventory, June 30, 1927.....	-----	-----	-----	-----	-----	8,035.54
Income, fiscal year 1927.....	51,933.98	26,732.04	15,189.26	2,414.47	3,086.21	469,640.09
Total.....	53,440.20	27,742.74	15,520.86	2,764.74	3,086.21	488,051.44

<sup>1</sup> Losses.TABLE NO. 43.—*Bureau of clubs and playgrounds, balance sheet, June 30, 1927*

ASSETS		LIABILITIES	
Fixed property:		Capital.....	\$69,905.70
Balboa swimming pool.....	\$28,442.84	Accounts payable:	
Pedro Miguel swimming pool.....	32,601.94	Audited vouchers.....	\$39,701.76
Cristobal silver clubhouse, bathing beach, and bathhouse.....	6,675.75	Goods received but not paid for.....	390.27
Tennis court, New Cristobal.....	2,185.17		40,092.03
	\$69,905.70	Deposits.....	17.50
Inventories:		Profit and loss (surplus), to June 30, 1926.....	154,150.80
Restaurant.....	2,225.30	Less—	
Cigars and candy.....	4,327.10	Transfer to capital account.....	\$4,111.22
Merchandise.....	3,823.41	Loss for fiscal year 1927.....	4,722.89
Balboa storeroom.....	8,035.54		48,834.11
	18,411.35		105,316.69
Accounts receivable:			
From Panama Railroad account—			
Coupons.....	11,327.09		
Other bills receivable.....	184.64		
	11,511.73		
Working cash:			
Cash with collector.....	104,835.14		
Cash in hands of secretaries.....	6,075.41		
	110,910.55		
Goods paid for in advance.....	3,193.51		
Credits in transit.....	21.68		
Work in progress: Bathhouse and stand, Balboa swimming pool.....	1,377.40		
	215,331.92		215,331.92

TABLE No. 44.—*Commissary coupons issued, sold, and honored during the fiscal year 1927*

## COUPON BOOKS ISSUED ON PAY-ROLL DEDUCTION

Month	\$2.50 silver		\$5 silver		\$7.50 silver		\$5 gold		\$15 gold		Total value
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	
1926-27											
July.....	3,832	\$9,580.00	24,914	\$124,570.00	7,867	\$59,002.50	1,061	\$5,305.00	6,600	\$99,000.00	\$297,457.50
August.....	3,601	9,002.50	24,316	121,880.00	8,528	63,960.00	1,018	5,090.00	6,385	95,775.00	293,707.50
September.....	3,397	8,492.50	24,625	123,125.00	8,364	62,730.00	1,002	5,010.00	6,485	97,275.00	296,632.50
October.....	3,352	8,380.00	24,913	124,565.00	8,383	62,872.50	1,136	5,680.00	6,840	102,600.00	304,097.50
November.....	3,507	8,767.50	25,077	125,385.00	8,166	61,245.00	1,186	5,930.00	7,875	118,125.00	319,452.50
December.....	3,011	7,527.50	28,702	143,510.00	11,302	84,765.00	1,250	6,250.00	9,426	141,390.00	383,442.50
January.....	5,077	12,692.50	25,459	127,235.00	8,976	67,320.00	1,283	6,415.00	7,892	118,380.00	332,102.50
February.....	3,764	9,410.00	26,667	133,335.00	9,638	67,785.00	1,275	6,375.00	7,408	111,120.00	328,025.00
March.....	3,775	9,437.50	27,600	138,000.00	9,432	71,190.00	1,235	6,175.00	7,498	112,470.00	337,272.50
April.....	3,675	9,187.50	26,627	133,135.00	8,825	66,187.50	1,231	6,155.00	7,529	112,935.00	327,600.00
May.....	3,862	9,655.00	26,887	134,435.00	9,167	68,752.50	1,216	6,080.00	7,546	113,190.00	332,112.50
June.....	3,362	8,405.00	26,819	134,095.00	9,236	69,270.00	1,127	5,635.00	7,121	106,815.00	324,220.00
Total.....	44,215	110,537.50	312,666	1,563,330.00	107,344	805,080.00	14,020	70,100.00	88,405	1,329,075.00	3,878,122.50

## COUPON BOOKS SOLD FOR CASH

Month	\$2.50 silver		\$5 silver		\$7.50 silver		\$5 gold		\$15 gold		Total value
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	
July.....	3,898	\$9,745.00	1,636	\$8,180.00	334	\$2,505.00	11,065	\$55,325.00	5,064	\$75,960.00	\$151,715.00
August.....	3,566	8,915.00	1,429	7,145.00	218	1,635.00	9,845	47,725.00	4,475	67,125.00	132,645.00
September.....	3,652	9,130.00	1,400	7,000.00	181	1,357.50	9,605	48,025.00	4,925	73,875.00	139,387.50
October.....	3,877	9,692.50	1,465	7,325.00	223	1,672.50	10,700	53,500.00	5,156	77,340.00	149,530.00
November.....	3,545	8,862.50	1,454	7,270.00	278	2,085.00	10,915	54,575.00	5,781	86,715.00	159,507.50
December.....	4,168	10,420.00	2,028	10,140.00	403	3,022.50	14,138	70,690.00	6,749	101,235.00	195,507.50
January.....	3,683	7,582.50	1,294	6,470.00	191	1,432.50	9,582	47,910.00	4,537	68,055.00	131,450.00
February.....	3,172	7,936.00	1,228	6,140.00	222	1,665.00	9,791	48,955.00	4,769	71,555.00	136,225.00
March.....	4,261	10,652.50	1,305	6,525.00	170	1,275.00	12,804	64,020.00	6,226	93,390.00	175,892.50
April.....	3,655	9,137.50	1,509	7,545.00	239	1,792.50	11,189	55,945.00	5,361	80,415.00	154,885.00
May.....	3,261	8,152.50	1,352	6,760.00	239	1,792.50	9,743	48,715.00	4,978	74,670.00	140,090.00
June.....	3,806	9,515.00	1,518	7,590.00	252	1,890.00	11,136	55,680.00	5,638	84,570.00	159,245.00
Total.....	43,894	109,735.00	17,618	88,090.00	2,950	22,125.00	130,213	651,065.00	63,659	954,885.00	1,825,900.00



COUPON BOOKS SOLD ON CREDIT

[illegible]

# COMMISSARY COUPONS HONORED

Month	Commissa- ries	Panama Canal club- houses	Restau- rants under contract	Hotel Tivoli	Hotel Washing- ton	Marine equipment	Panama Railroad pasture messes	Army and Navy Y. M. C. A.	Miscella- neous	Total value
July	\$434,222.41	\$11,774.13	\$18,690.43	\$192.81	\$237.06	\$34.50	\$8.59	\$295.64	\$118.00	\$465,573.57
August	409,567.69	10,357.20	17,755.90	204.38	319.55	15.50	6.11	266.29	104.96	438,627.58
September	401,637.52	10,910.33	18,112.17	153.40	333.20	26.00		283.76	98.95	431,564.43
October	456,782.38	10,511.75	17,941.87	191.79	136.25	28.00	17.84	252.15	102.06	485,924.29
November	456,913.73	10,697.88	17,719.83	240.15	300.28	27.29		245.91	104.06	486,249.13
December	538,500.61	11,679.40	18,544.36	298.12	178.95	17.00	12.91	257.13	102.15	569,590.63
January	472,334.54	12,509.18	20,023.97	321.49	308.95	7.00	4.75	279.27	103.65	505,892.80
February	436,452.61	12,136.24	19,347.23	373.20	171.55	7.00	4.98	258.29	136.98	468,893.58
March	493,351.54	12,819.47	21,289.55	218.87	171.30	17.50	7.36	283.71	76.49	528,245.79
April	482,992.72	11,801.47	18,992.42	177.81	180.25	17.50	10.18	263.83	86.56	514,483.24
May	452,617.32	11,112.88	19,888.20	122.40	164.70	16.50	15.53	194.07	144.47	484,276.07
June	451,003.73	11,327.09	19,697.71	57.66	260.00	30.00	11.12	253.51	121.56	482,762.38
Total	5,486,376.80	137,637.02	228,033.64	2,552.08	2,762.04	288.79	99.37	3,104.56	1,259.19	5,862,083.49

TABLE NO. 67.—*Statement showing the origin and destination of cargo passing through the canal, Atlantic to Pacific*

Origin of cargo	Total cargo tonnage	Tonnage destined for—			
		West coast of North America	West coast of South America	Asia	Australasia
East coast of United States:					
Fiscal year 1927.....	5,783,266	2,953,836	391,302	1,628,186	809,942
Fiscal year 1926.....	5,366,433	2,890,442	383,572	1,357,186	735,233
Fiscal year 1925.....	4,815,528	2,478,067	378,249	1,237,109	722,103
Fiscal year 1924.....	5,467,255	2,907,899	347,659	1,545,622	666,075
East coast of North America (other than United States):					
Fiscal year 1927.....	729,975	229,373	84,982	204,070	211,550
Fiscal year 1926.....	540,282	179,865	97,719	103,959	158,739
Fiscal year 1925.....	536,703	200,799	190,090	47,016	98,798
Fiscal year 1924.....	528,837	126,596	300,000	21,808	80,433
Europe:					
Fiscal year 1927.....	1,896,140	784,279	605,361	6,902	499,598
Fiscal year 1926.....	2,047,939	768,053	756,225	743	522,918
Fiscal year 1925.....	1,978,969	741,705	760,006	8,800	468,458
Fiscal year 1924.....	1,773,162	703,349	620,503	-----	449,310
East coast of South America and miscellaneous:					
Fiscal year 1927.....	173,946	152,357	6,009	15,580	-----
Fiscal year 1926.....	82,443	70,792	7,396	4,255	-----
Fiscal year 1925.....	67,197	54,060	9,805	3,332	-----
Fiscal year 1924.....	90,846	62,047	11,404	17,395	-----
Grand totals:					
Fiscal year 1927.....	8,583,327	4,119,845	1,087,654	1,854,738	1,521,090
Fiscal year 1926.....	8,037,097	3,909,152	1,244,912	1,466,143	1,416,890
Fiscal year 1925.....	7,398,397	3,474,631	1,338,150	1,296,257	1,289,359
Fiscal year 1924.....	7,860,100	3,799,891	1,279,566	1,584,825	1,195,818

TABLE NO. 68.—*Statement showing the origin and destination of cargo passing through the canal, Pacific to Atlantic*

Origin of cargo	Total cargo tonnage	Tonnage destined for—			
		East coast of United States	Other North America	Europe	Africa, South America, and miscellaneous
West coast of North America:					
Fiscal year 1927.....	13,722,868	8,544,489	1,172,178	3,815,829	190,372
Fiscal year 1926.....	12,151,661	8,324,410	685,680	3,013,254	128,317
Fiscal year 1925.....	11,059,409	7,875,201	498,161	2,586,321	99,726
Fiscal year 1924.....	14,453,405	11,157,946	774,359	2,488,149	32,951
West coast of South America:					
Fiscal year 1927.....	4,420,091	2,498,445	455,466	1,316,050	150,130
Fiscal year 1926.....	4,889,695	2,805,631	381,957	1,603,211	98,896
Fiscal year 1925.....	4,714,243	2,651,266	274,304	1,688,087	100,586
Fiscal year 1924.....	3,989,078	2,317,537	236,469	1,360,607	74,465
Australasia:					
Fiscal year 1927.....	571,939	80,269	15,747	475,923	-----
Fiscal year 1926.....	622,609	67,010	11,812	543,787	-----
Fiscal year 1925.....	480,539	54,543	17,013	407,583	1,400
Fiscal year 1924.....	360,193	59,559	3,431	297,203	-----
Asia:					
Fiscal year 1927.....	449,990	370,109	58,843	21,038	-----
Fiscal year 1926.....	336,356	314,767	11,069	10,550	-----
Fiscal year 1925.....	306,248	240,423	37,434	28,391	-----
Fiscal year 1924.....	331,934	278,610	48,324	4,500	500
Grand totals:					
Fiscal year 1927.....	19,164,888	11,493,312	1,702,234	5,628,840	340,502
Fiscal year 1926.....	18,000,351	11,511,818	1,090,518	5,170,802	227,213
Fiscal year 1925.....	16,560,439	10,821,433	826,912	4,710,382	201,712
Fiscal year 1924.....	19,134,610	13,813,652	1,062,583	4,150,459	107,916

TABLE No. 69.—Statement showing, by nationality, the number of transits of vessels, aggregate Panama Canal net tonnage, tolls assessed, and tons of cargo carried through The Panama Canal by fiscal years from the opening of the canal, August 15, 1914, to June 30, 1927

Nationality and fiscal year	Number of ships	Panama Canal net tonnage	Tolls	Tons of cargo
<b>Argentine:</b>				
1916.....	1	2,335	\$1,167.50	-----
1918.....	1	(1)	1,093.50	-----
1923.....	1	(1)	1,240.00	-----
1925.....	2	4,727	16,887.44	-----
1927.....	1	(1)	1,200.00	-----
Total.....	6	7,062	21,588.44	-----
<b>Belgian:</b>				
1919.....	1	265	3,943.75	464
1920.....	1	266	338.75	406
1921.....	2	8,092	7,886.25	12,700
1923.....	3	13,524	13,958.75	23,952
1925.....	4	12,825	13,907.50	23,259
1926.....	19	81,774	78,052.62	87,829
1927.....	16	79,214	75,245.31	82,558
Total.....	46	195,960	193,332.93	231,168
<b>Brazilian:</b>				
1920.....	3	19,164	19,217.88	8,916
1921.....	1	4,566	4,388.75	6,700
Total.....	4	23,730	23,606.63	15,616
<b>British:</b>				
1915.....	465	1,630,833	1,847,341.10	2,200,514
1916.....	358	1,161,097	1,140,395.07	1,570,660
1917.....	780	2,663,250	2,595,158.60	3,393,750
1918.....	702	2,529,203	2,498,596.49	2,615,675
1919.....	607	1,915,744	1,954,715.87	1,876,939
1920.....	753	2,760,188	2,805,018.50	2,830,268
1921.....	972	3,978,329	3,989,281.58	3,738,257
1922.....	935	3,795,526	3,728,007.80	3,329,861
1923.....	1,065	4,892,338	4,736,221.04	4,929,317
1924.....	1,265	6,097,611	5,814,983.83	6,051,842
1925.....	1,211	5,949,391	5,734,039.19	5,917,058
1926.....	1,423	7,039,542	6,569,712.05	6,750,843
1927.....	1,351	6,942,555	6,452,527.10	6,436,785
Total.....	11,887	51,355,607	49,865,998.42	51,641,769
<b>Chilean:</b>				
1915.....	35	94,638	101,275.95	50,879
1916.....	33	91,243	80,192.25	53,573
1917.....	99	265,210	236,588.20	184,446
1918.....	96	254,841	223,146.30	153,259
1919.....	93	253,561	212,511.90	161,340
1920.....	79	212,000	169,472.55	104,738
1921.....	63	159,727	147,023.75	61,737
1922.....	53	150,398	115,757.90	46,182
1923.....	62	201,411	158,182.50	76,670
1924.....	47	176,472	157,035.25	107,147
1925.....	29	129,183	121,699.25	96,369
1926.....	26	121,901	113,603.75	82,695
1927.....	27	114,427	106,899.60	86,960
Total.....	742	2,225,012	1,943,389.15	1,265,995
<b>Chinese:</b>				
1918.....	2	7,799	33,842.60	13,417
1919.....	4	15,204		13,421
1920.....	2	7,799		13,700
1921.....	4	12,098		14,400
Total.....	12	42,900	47,029.70	54,938
<b>Colombian:</b>				
1919.....	1	66	49.50	-----
1920.....	1	95	105.00	27
1923.....	18	6,030	7,109.60	7,054
1925.....	22	5,767	6,612.11	5,897
1926.....	23	1,752	1,758.77	1,563
1927.....	46	4,897	5,195.40	5,378
Total.....	52	21,500	22,592.25	20,917
Total.....	163	40,107	43,422.63	40,836

<sup>1</sup> Indicates war vessel, displacement tonnage.

TABLE NO. 69.—*Statement showing, by nationality, the number of transits of vessels, aggregate Panama Canal net tonnage, tolls assessed, and tons of cargo carried through The Panama Canal by fiscal years from the opening of the canal, August 15, 1914, to June 30, 1927—Continued*

Nationality and fiscal year	Number of ships	Panama Canal net tonnage	Tolls	Tons of cargo
<b>Costa Rican:</b>				
1917 to 1920.....	55	4,506	\$5,394.95	6,297
1921.....	16	2,784	2,952.78	2,112
1922.....	1	18	18.75	5
1923.....	1	45	53.75	
1927.....	2	138	103.50	
<b>Total.....</b>	<b>75</b>	<b>7,491</b>	<b>8,523.73</b>	<b>8,414</b>
<b>Cuban:</b>				
1917.....	6	9,292	9,847.50	7,370
1921.....	1	702	722.50	1,200
<b>Total.....</b>	<b>7</b>	<b>9,994</b>	<b>10,570.00</b>	<b>8,570</b>
<b>Danish:</b>				
1915.....	24	92,537	110,680.30	116,603
1916.....	18	68,011	66,938.80	94,950
1917.....	43	163,882	141,461.44	242,567
1918.....	100	272,946	249,761.14	420,063
1919.....	79	213,534	207,404.47	325,277
1920.....	9	32,221	43,528.35	42,533
1921.....	60	236,512	241,411.86	322,059
1922.....	53	227,473	222,146.65	272,779
1923.....	65	240,053	221,569.36	307,876
1924.....	65	245,929	229,205.17	317,274
1925.....	42	160,299	152,641.74	201,577
1926.....	63	234,753	223,595.27	295,530
1927.....	46	198,432	187,640.36	261,543
<b>Total.....</b>	<b>667</b>	<b>2,386,582</b>	<b>2,297,984.91</b>	<b>3,220,631</b>
<b>Danzig:</b>				
1924.....	11	88,276	72,498.00	54,764
1925.....	10	80,164	61,920.53	54,607
1926.....	15	105,460	89,852.25	95,604
1927.....	29	192,947	166,959.26	159,362
<b>Total.....</b>	<b>65</b>	<b>466,847</b>	<b>391,230.04</b>	<b>364,337</b>
<b>Dutch:</b>				
1915.....	7	21,075	24,103.58	26,402
1916.....	15	39,642	43,910.44	61,959
1917.....	74	260,500	270,321.78	314,203
1918.....	48	197,627	214,211.46	233,063
1919.....	19	88,299	97,467.75	119,297
1920.....	29	152,535	126,868.98	128,442
1921.....	50	248,801	229,248.94	216,488
1922.....	66	293,428	260,138.38	290,573
1923.....	109	510,970	450,356.36	487,957
1924.....	102	551,761	489,807.74	573,929
1925.....	102	531,251	484,614.29	619,017
1926.....	93	530,652	489,405.80	552,741
1927.....	105	575,065	542,023.19	571,700
<b>Total.....</b>	<b>819</b>	<b>4,001,606</b>	<b>3,722,478.69</b>	<b>4,195,771</b>
<b>Ecuadorian:</b>				
1919.....	1	66	82.50	72
1924.....	1	36	27.00	
1926.....	3	453	477.90	340
1927.....	6	1,210	1,322.46	1,638
<b>Total.....</b>	<b>11</b>	<b>1,765</b>	<b>1,909.86</b>	<b>2,050</b>
<b>Finnish:</b>				
1921.....	2	4,281	5,137.20	7,101
1924.....	3	4,798	5,757.60	7,500
1925.....	3	8,145	8,974.00	12,892
1926.....	2	3,632	4,358.40	6,600
1927.....	2	3,722	3,644.55	3,100
<b>Total.....</b>	<b>12</b>	<b>24,578</b>	<b>27,871.75</b>	<b>37,193</b>



TABLE No. 69.—Statement showing, by nationality, the number of transits of vessels, aggregate Panama Canal net tonnage, tolls assessed, and tons of cargo carried through The Panama Canal by fiscal years from the opening of the canal, August 15, 1914, to June 30, 1927—Continued

Nationality and fiscal year	Number of ships	Panama Canal net tonnage	Tolls	Tons of cargo
French:				
1915.....	3	10,703	\$12,843.60	13,600
1916.....	1	4,343	4,782.50	7,176
1917.....	9	38,889	39,446.42	36,680
1918.....	52	147,805	152,028.03	159,859
1919.....	104	253,774	283,971.06	286,812
1920.....	60	114,664	127,818.17	125,249
1921.....	44	155,889	164,575.94	132,836
1922.....	51	190,171	216,475.40	139,463
1923.....	56	252,333	258,360.69	230,175
1924.....	83	386,640	428,571.60	407,249
1925.....	105	489,806	491,042.27	481,526
1926.....	90	421,752	414,556.96	398,393
1927.....	116	535,719	518,419.78	530,026
Total.....	774	3,002,488	3,112,892.42	2,949,044
German:				
1920.....	17	52,755	49,953.38	59,239
1921.....	19	67,334	62,908.95	73,837
1922.....	37	122,893	120,087.25	121,888
1923.....	90	336,149	312,395.35	330,134
1924.....	150	660,156	604,085.65	737,103
1925.....	163	723,067	660,896.34	830,512
1926.....	163	726,340	658,858.12	885,007
1927.....	212	779,812	707,510.22	973,741
Total.....	851	3,468,506	3,176,695.26	4,011,461
Greek:				
1918 and 1919.....	5	14,575	12,040.59	14,042
1922.....	5	18,618	19,293.40	11,956
1923.....	6	23,526	20,328.93	30,533
1924.....	1	4,038	3,958.75	6,562
1925.....	3	11,545	11,810.00	18,823
1926.....	8	32,076	28,996.52	35,432
1927.....	1	4,047	4,010.00	6,124
Total.....	29	108,425	100,438.19	123,472
Honduran:				
1915.....	3	606	561.00	321
1916.....	3			
1926.....	20	28,443	25,541.40	6,126
1927.....	1	425	306.00	-----
Total.....	27	29,474	26,408.40	6,447
Irish:				
1925.....	8	29,176	25,833.36	24,286
Italian:				
1915.....	2	4,158	3,992.40	900
1916.....	1	3,861	2,779.92	-----
1917.....	2	6,430	6,029.80	5,700
1918.....	4	17,218	16,875.70	13,793
1920.....	26	98,692	98,959.79	63,441
1921.....	25	102,783	103,206.60	47,988
1922.....	20	73,393	75,511.30	38,851
1923.....	29	117,782	119,329.58	75,258
1924.....	43	164,448	170,565.90	125,156
1925.....	57	241,054	257,881.25	180,062
1926.....	90	379,960	405,031.30	322,236
1927.....	71	344,491	363,168.32	308,050
Total.....	373	1,554,300	1,623,331.86	1,181,435
Japanese:				
1915.....	6	24,897	30,260.40	42,600
1916.....	24	81,818	88,229.68	117,780
1917.....	72	291,500	305,702.63	446,358
1918.....	54	238,814	248,063.30	407,399
1919.....	87	341,064	364,622.57	503,427
1920.....	118	515,243	543,936.93	726,338
1921.....	136	613,245	655,176.51	758,617
1922.....	189	872,466	953,949.00	1,044,515

TABLE NO. 69.—Statement showing, by nationality, the number of transits of vessels, aggregate Panama Canal net tonnage, tolls assessed, and tons of cargo carried through The Panama Canal by fiscal years from the opening of the canal, August 15, 1914, to June 30, 1927—Continued

Nationality and fiscal year	Number of ships	Panama Canal net tonnage	Tolls	Tons of cargo
<b>Japanese—Continued.</b>				
1923.....	163	753, 219	\$815, 638. 48	943, 400
1924.....	171	815, 468	844, 976. 31	935, 245
1925.....	172	823, 869	853, 199. 19	946, 916
1926.....	131	649, 028	671, 071. 35	667, 982
1927.....	165	818, 310	862, 699. 61	1, 036, 786
Total.....	1, 488	6, 838, 941	7, 237, 525. 96	8, 577, 363
<b>Mexican:</b>				
1917 to 1919.....	15	24, 788	24, 626. 95	22, 940
1921.....	4	5, 032	4, 354. 36	3, 785
1922.....	6	2, 219	1, 780. 77	10.
1923.....	2	2, 292	2, 061. 75	.....
1924.....	1	192	138. 24	.....
1925.....	2	4, 291	4, 056. 25	2, 400
1926.....	1	2, 025	2, 111. 25	1, 064
1927.....	1	2, 159	1, 961. 25	2, 145
Total.....	32	42, 998	41, 690. 82	32, 344
<b>Nicaraguan:</b>				
1915 to 1917.....	3	1, 644	1, 205. 76	6
1925.....	1	425	306. 00	.....
Total.....	4	2, 069	1, 511. 76	6
<b>Norwegian:</b>				
1915.....	42	130, 776	141, 066. 91	166, 522
1916.....	44	172, 459	149, 357. 56	229, 368
1917.....	145	490, 534	448, 948. 53	597, 581
1918.....	296	876, 024	823, 748. 57	1, 090, 823
1919.....	128	497, 555	460, 057. 68	577, 679
1920.....	106	397, 632	371, 408. 79	404, 323
1921.....	140	548, 227	523, 311. 94	637, 887
1922.....	113	385, 007	374, 870. 62	408, 268
1923.....	147	597, 359	558, 839. 74	704, 292
1924.....	136	546, 633	496, 876. 96	539, 101
1925.....	192	672, 663	619, 403. 58	842, 708
1926.....	306	987, 040	875, 812. 99	1, 051, 276
1927.....	265	907, 675	808, 621. 74	1, 052, 453
Total.....	2, 060	7, 209, 584	6, 652, 325. 61	8, 302, 281
<b>Panaman:</b>				
1915 to 1920.....	15	1, 681	1, 144. 90	1, 007
1921.....	8	1, 370	1, 463. 50	1, 500
1922.....	8	700	611. 30	526
1923.....	31	61, 828	59, 259. 86	40, 589
1924.....	21	43, 056	40, 804. 19	35, 719
1925.....	36	68, 656	51, 844. 12	53, 627
1926.....	53	84, 295	64, 187. 40	63, 922
1927.....	105	85, 374	66, 844. 25	87, 776
Total.....	277	346, 960	286, 159. 52	284, 666
<b>Peruvian:</b>				
1915.....	4	9, 403	10, 034. 30	8, 202
1916.....	30	74, 429	67, 691. 30	62, 210
1917.....	86	218, 593	199, 860. 25	159, 609
1918.....	83	208, 958	177, 732. 30	143, 344
1919.....	64	166, 956	133, 243. 12	121, 524
1920.....	75	191, 659	161, 964. 75	119, 418
1921.....	60	157, 495	107, 160. 64	105, 322
1922.....	60	161, 930	103, 035. 30	64, 370
1923.....	80	216, 829	152, 620. 10	111, 519
1924.....	70	189, 046	127, 183. 38	102, 136
1925.....	73	188, 784	126, 985. 45	101, 005
1926.....	64	149, 162	111, 618. 67	94, 778
1927.....	63	143, 157	123, 125. 70	107, 997
Total.....	812	2, 076, 431	1, 602, 255. 26	1, 301, 434
<b>Portuguese:</b>				
1920.....	2	9, 002	10, 802. 40	10, 775
1926.....	1	2, 360	2, 645. 00	4, 500
Total.....	3	11, 362	13, 447. 40	15, 275
<b>Russian:</b>				
1915 to 1920.....	17	45, 913	44, 826. 02	52, 550
1921.....	4	11, 279	12, 156. 25	11, 343
Total.....	21	57, 192	56, 982. 27	63, 893

TABLE NO. 69.—Statement showing, by nationality, the number of transits of vessels, aggregate Panama Canal net tonnage, tolls assessed, and tons of cargo carried through The Panama Canal by fiscal years from the opening of the canal August 15, 1914, to June 30, 1927—Continued.

Nationality and fiscal year	Number of ships	Panama Canal net tonnage	Tolls	Tons of cargo
<b>Spanish:</b>				
1917.....	20	49,124	\$47,731.15	71,080
1918.....	11	21,469	21,032.78	35,394
1919.....	5	11,066	11,092.29	10,047
1920.....	41	106,651	98,228.02	101,563
1921.....	44	117,400	118,548.41	143,076
1922.....	9	27,264	32,712.88	23,701
1923.....	14	41,201	38,162.75	32,178
1924.....	45	172,572	160,336.40	67,903
1925.....	43	159,579	147,985.73	72,011
1926.....	31	121,461	117,786.81	49,956
1927.....	30	110,544	107,904.65	47,576
<b>Total.....</b>	<b>293</b>	<b>941,331</b>	<b>904,462.37</b>	<b>654,485</b>
<b>Swedish:</b>				
1915.....	17	50,824	58,174.76	53,292
1916.....	13	41,537	35,892.70	47,236
1917.....	18	69,202	56,793.78	91,515
1918.....	26	80,191	74,621.25	132,521
1919.....	27	95,684	88,572.73	143,516
1920.....	19	76,825	62,268.74	74,244
1921.....	25	113,661	93,331.25	128,919
1922.....	35	124,446	105,939.90	141,448
1923.....	31	130,361	108,151.33	181,810
1924.....	39	161,993	130,935.00	220,517
1925.....	49	225,593	186,404.82	282,447
1926.....	84	369,272	311,174.14	636,266
1927.....	106	394,907	329,804.98	652,173
<b>Total.....</b>	<b>489</b>	<b>1,934,496</b>	<b>1,642,065.38</b>	<b>2,788,904</b>
<b>United States:</b>				
1915.....	459	1,700,145	2,002,845.77	2,187,904
1916.....	213	652,989	724,219.01	848,857
1917.....	404	1,239,492	1,238,322.63	1,475,725
1918.....	567	1,704,040	1,713,827.23	2,098,277
1919.....	784	2,257,342	2,327,261.48	2,758,886
1920.....	1,129	3,791,088	3,805,924.77	4,547,140
1921.....	1,210	4,861,761	4,784,577.35	5,163,025
1922.....	1,095	4,971,569	4,867,495.81	4,950,519
1923.....	1,994	10,208,536	9,474,034.93	11,055,156
1924.....	2,947	15,806,899	14,453,327.71	16,654,435
1925.....	2,326	12,271,387	11,302,031.19	13,080,200
1926.....	2,432	12,565,255	11,559,809.38	13,710,956
1927.....	2,685	13,914,615	12,720,447.95	15,242,156
<b>Total.....</b>	<b>18,245</b>	<b>85,945,088</b>	<b>80,984,125.21</b>	<b>93,773,236</b>
<b>Uruguayan:</b>				
1919 and 1920.....	2	410	2,136.00	-----
<b>Yugoslav:</b>				
1921.....	2	4,508	4,877.50	8,325
1924.....	7	27,087	23,276.25	45,231
1925.....	17	67,519	64,401.25	115,971
1926.....	33	133,028	127,601.25	231,994
1927.....	14	57,340	53,847.88	76,649
<b>Total.....</b>	<b>73</b>	<b>289,482</b>	<b>274,001.13</b>	<b>478,170</b>
<b>Total traffic:</b>				
1915.....	1,075	3,792,572	4,367,550.19	4,888,454
1916.....	758	2,396,162	2,408,089.62	3,094,114
1917.....	1,803	5,798,557	5,627,463.05	7,058,563
1918.....	2,069	6,574,073	6,438,853.15	7,532,031
1919.....	2,024	6,121,990	6,172,828.59	6,916,621
1920.....	2,478	8,546,044	8,513,933.15	9,374,499
1921.....	2,892	11,415,876	11,276,889.91	11,599,214
1922.....	2,736	11,417,459	11,197,832.41	10,884,910
1923.....	3,967	18,605,786	17,508,414.85	19,567,875
1924.....	5,230	26,148,878	24,290,963.54	26,994,710
1925.....	4,673	22,855,151	21,400,523.51	23,958,836
1926.....	5,197	24,774,591	22,931,055.98	26,037,418
1927.....	5,475	26,227,815	21,228,830.11	27,748,215
<b>Total.....</b>	<b>40,377</b>	<b>174,677,954</b>	<b>166,363,228.06</b>	<b>185,655,490</b>









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